

COMPUTER & VIDEO GAMES



CURSE OF
THE
AZTEC TOMB

£1.95 lot

MEET PENGU...OUR GAME...83+11 COMPUTER GAMES
WARPATH...PROGRAMMING...AND A WARGAME ALL-IN-ONE

THE BEST VIDEO GAMES

At least 20% off, up to 30% off all your favourite video games – that's the unbeatable price promise when you join the Video Games Club.

No commitments, just buy what you want, when you want – always at the guaranteed lowest prices in the UK! * Plus regular special offers for Life Members like chess computers, LED and LCD hand-held games, radio watches – always at least 20% off! Life Membership costs just £25, one-year Trial Membership just £7.50. Join today, and start saving!

THE GUARANTEED LOWEST PRICES!

ATARI APOLLO

PAC MAN
YAR'S REVENGE
DEFENDER
BERZERK
£23.47 + P&P

SPACE CAVERN
SHARK ATTACK
£17.40 + P&P

ATARI SYSTEMS — JUST LOOK AT THE SAVINGS YOU GET AS A LIFE MEMBER!

Atari VCS — only £87.95!

AND ON THE ATARI 400 AND 800, YOU GET FREE MERCHANDISE WORTH 15% OF THE VALUE OF YOUR PURCHASE from a selected range of software and controls!

Atari 400 £199.99 — with free merchandise worth £29.99!

Atari 800 £499.99 — with free merchandise worth £74.99!

PLUS "Le Stick" hand-controller only £20.99!

COD available on 400 and 800 if preferred!

UPGRADE NOW! WE'LL GIVE YOU £25 WHEN YOU TRADE-IN YOUR VCS FOR AN ATARI 400 OR 800 HOME COMPUTER!

WE'LL TAKE YOUR OLD GAMES, TOO!

Free P&P on all Atari Computers!



ACTIVISION PARKER

STARMASTER
CHOPPER C'MND
ICE HOCKEY
BARNSTORMING
£18.06 + P&P

STAR WARS
FROGGER
£23.47 + P&P

SPECIAL INTRODUCTORY OFFERS TO ALL NEW LIFE MEMBERS!
FREE Hungarian Rings puzzle worth £3.99, plus FREE 10,000,000,000 puzzle worth £3.99! Plus FREE ENTRY to the Video Games Club Competition — out of every 1,000 new Life Members, one will win a complete Atari-compatible library of 71 cartridges worth £1,500! JOIN TODAY!

FREE LIFE MEMBERSHIP!
INTRODUCE 10 NEW LIFE MEMBERS AND GET YOUR £25 LIFE MEMBERSHIP BACK IN VIDEO GAMES CLUB MERCHANDISE OF YOUR CHOICE!

Dept. CVG1 Video Games Club,
FREEPOST, London E5 9BR.
(NO STAMP REQUIRED)

Please enrol me for Life Membership @ £25
1yr Trial Membership @ £7.50
(delete where applicable).
I am over 18. I enclose £

Name _____

Address _____

For further information send 9" x 6" stamped & addressed envelope

VIDEO GAMES CLUB

Cheques/POs should be made payable to Video Games Club. Or pay by TRANSASH No: 507 2751 at any Post Office. Only send cash through registered mail, please.

Dept. CVG1 Video Games Club,
FREEPOST, London E5 9BR.
(NO STAMP REQUIRED)

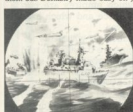
*If you can buy cheaper, we guarantee to refund the difference!

News & Reviews

GAMES NEWS	18
Take a quiet ride in the country with those nice Duke boys aboard the General Lee, and solve the mystery of the Time Gate.	
VIDEO SCREENS	28
E.T. fever is sweeping the country, and we're joining in, plus news of the awesome System X.	
ARCADE ACTION	30
If ever a game captured the heart of an editor, <i>Pengo</i> is it. He wanted to change this column's name to <i>Antarctic Action</i> after playing the "Game of '83", but we persuaded him to find room for some big-boy tips too.	
REVIEWS	98
There's a round up of asteroid games for the Spectrum, plus <i>Vic</i> chess.	
NEXT MONTH	4

Listings

SUBMARINE HUNTER	32
Take your helicopter out over the icy seas and tackle the enemy hidden below the waves. Your task is to seek out and destroy the Atari subs but keep a wary eye on their protective destroyers.	
NIBBLERS	38
Yes, its those little creatures with the big appetite back again in this special adaptation of our Game of the Year, written this time for the Vic-20.	
DRAGON'S TEETH	42
In days of old when knights were bold... they never had to use a table tennis bat to fight dragons with! There's no time for chivalry here — just aim for the fire breathing beasties molar and knock them out. Dentistry made easy on your Dragon.	
BULLION SNATCH	45
Past! Want to grab a gold record? Well here's your chance. Sneak around a maze and bag the bullion on your Acorn Atom.	
CURSE OF THE AZTEC TOMB	46
In the darkest recesses of an ancient tomb there is a treasure so mysterious that it is only mentioned in whispers. Only ZX81 owners will be brave enough...	
TUNNEL RUN	50
Zapping through narrow tunnels in your Pet.	
CAVE FLIGHT	52
On a mission to save your planet from an energy crisis your space freighter is stricken with a terminal illness. Dare you program this game into your BBC micro!	
GALAXIANS	56
Arcade alien action for Spectrum owners as a convoy of nasty beings sweeps across the universe with one aim in mind. To wipe you out...	
CRITICAL MASS	58
Overcrowding could prove fatal in this board game which really goes with a bang. Explosive intellectual action for TMS-80 owners.	
MZ-LUDO	62
Tactics and quick thinking are what you need to beat the computer at its own game on the Sharp MZ-80K.	
TARGET	68
For Texas TI 99/4a owners with a death wish...	



On the warpath...

Just when all seems lost that cavalry bugle sounds and the Indians take flight.

But that may be true of films but don't expect it in our Warpath game.

Ron Potkin is serialising his thrilling wild west war game in such a way as to improve your own programming skills.

Ron is a self-confessed memory miser and a Briton whose games earned a special prominence in the US's micro computer infancy.

At the end of the series, you'll not only have a game which John Wayne would excel in, but enough knowledge and a working base on which to build your own wargame scenarios.

Turn to page 88 and take to the Warpath.

Features

MAILBAG	7
Talking points, tips and advice.	
COMPETITION	10
Win a place among the UK's professional games designers.	
SEVEN EMPIRES	16
Our unique game/competition starts next month but here's a chance to check-out the rules.	
BUGS	25
T. Hatch tangles with the Graphic Real-time Organic Programming Expressions language.	
CHESS	27
Max Brammer goes by the book.	
PUZZLING	72
Three hand-held space invaders are up for grabs if you can shoot down ours.	
BRIDGE	75
Alan Hiron holds a branch search meeting.	
MACHINE CODE	78
Inside the microprocessor, with Ted Ball.	
ADVENTURE	82
Developing a plot. Keith Campbell puts a few verbs in the melting pot.	
WARPATH	88
The start of our series on wargaming.	
GRAPHICS	97
Garry Marshall reads between the lines, with some rudimentary animation techniques.	

Editor Terry Pratt. Staff Writer Eugene Lacey. Editorial assistant Susan Cameron. Designer Linda Freeman. Production editor Tim Metcalfe.

Advertisement manager Rita Lewis. Advertising executive Neil Wood, John Phillips, Louise Matthews. Advertisement assistant Louise Fitchart. Publisher Tom Molineux.

Editorial and advertisement offices: Durrant House, 8 Herby Hill, London EC1R 8JH. Telephone Editorial 01-278 4896, Advertising 01-278 6082.

COMPUTER AND VIDEO GAMES POSTAL SUBSCRIPTION SERVICE. By using the special Postal Subscription Service, copies of *COMPUTER AND VIDEO GAMES* can be mailed direct from our offices each month to any address throughout the world. All subscription applications should be sent for processing to *COMPUTER AND VIDEO GAMES (Subscription Department)*, Competition House, Farmdon Road, Market Harborough, Leicestershire. All orders should include the appropriate remittance made payable to *COMPUTER AND VIDEO GAMES*. Annual subscription rates (12 issues): UK and Eire £10.00 Overseas surface mail £20.00 Airmail Europe £20.00 Additional service information including individual overseas annual rates available upon request. Circulation Department: EMAP National Publications. Published and distributed by EMAP National Publications Ltd. Printed by Eden Fisher (Southend) Limited.

© Computer & Video Games Limited ISSN 0301 3697.

Cover: Stuart Briers. Next issue: January 18th.

BEFRIEND AN ALIEN TODAY

**NEXT
MONTH**

In Space Watch we first invited you to befriend the aliens, long before anyone had seen a pirated copy of that E.T. character.

Now our science fiction specialist, David Langford takes the diplomacy before galactic destruction line a step further with Taming The Invaders.

This really is a game with a message, in fact there's lots of messages, all sent by you — the player — to the teeming millions of confused space creatures thronging our atmosphere.

There's getting to be so many of the little green devils out there that they'll soon be in danger of polluting

the atmosphere. Can you successfully find the alien code to persuade them your species is intelligent? ... Is this asking too much of C&VG readers? Of, of course not!

Follow the second article in our Warpath series, which not only promises to tidy up and speed up your programming, but also gives you a fully-fledged Wild West war-game at the end of the article.

There's also some classic games waiting for you between the covers: Crazy Kong relives the thrills of a well-known arcade game; Escape from the Pyramids of Mars; Over the Orchard Wall; Airline Pilot; Golf; Pompeii and many more.

**NEXT
MONTH**

You will notice that the February issue of *Computer & Video Games* stands out a little more on the news-stands.

This is because it is not alone on the shelf but closely closetted with a friend, *The C&VG Book of Games*.

Forty-eight pages of games for all the popular computers, tightly packed into one super free supplement to ensure that the Christmas micro is put to good use.

Of course we won't be cutting down the usual high quality content of the magazine, we've just been working specially hard, looking out and testing extra programs for the *Book of Games* and we hope you think that it's been worthwhile.

Let us name just a few: Star Trek, Snakes, Ghosts, Victorian Sewers, 3D Maze, Space Attack, Golf, Word Find, Magic Square, Red Alert and others too numerous to mention. Be sure and get your free *Book of Games*. Newsagents have been warned to expect the rush from Saturday January 15.

THE SEVENTH EMPIRE GOES TO WAR

The Seventh Empire will be at war as from the February issue of *Computer & Video Games* and we want you to get involved in the conflict.

A rulebook is on the way to all of you who have so far entered this unique play-by-mail game but the rules are also briefly outlined for the curious on pages 16 and 17 of this issue.

If you haven't yet sent in your entry form then please fill in the form below straight away and despatch it to us. Because of the strange deadlines imposed upon us by Christmas holidays, only those forms which reach us by December 21st will be entered for the first round of the game in our February issue. Any entries which arrive later will be included in the March issue game of Seventh Empire.

The Seventh Empire is a unique game/competition which will only cost you the price of a stamp each month. Specially designed

for C&VG by Mike Singleton, the inventor of Britain's top computer-moderated-game, Starboard, it can be played by up to 10,000 readers.

There will be a winner each month and an overall winner over the entire run of the game. The winner of our first turn in February will win a Colour Genie home computer.

Every player will control one of the galaxy's many tribes with seven space fleets to despatch around the star system. He will hire his fleets out as mercenaries to take part in the conflicts between rival empires, choose plum planets rich in resources to raid, commit acts of piracy on rival fleets or trade his way up to a high score by careful watching of the galactic fortunes and commodities.

The game is moderated by a Commodore Pet computer at our end but there is no luck in the play, only skill, foresight and

sheer animal cunning. Each month a new galactic map will be published in C&VG to show ship numbers at each star system and help you work out your tribe's profits.

We will also publish battle reports which may have changed the face of the galactic map. A diplomatic diagram which will show how the empires have reacted to wars and raiding ships, which empires are currently at peace and which have declared war.

Information on where the imperial ships are travelling to and a Gateway chart which will show which of the 600 or so routes were hit by pirates. From this information you will be able to piece together your score for the turn.

At our end the computer will come up with a top 10 high scorers for that issue. Scores will vary from several thousand points amassed to minus figures for those who traded badly.

Send the form below to: The Seventh Empire, *Computer & Video Games*, Durrant House, 8, Herbal Hill, London EC1R 5JB.

Several of you sent in entries on letters and other pieces of paper last month and we decided to accept them, but if you are a new entrant please send off this form on the left cut out at the dotted line.

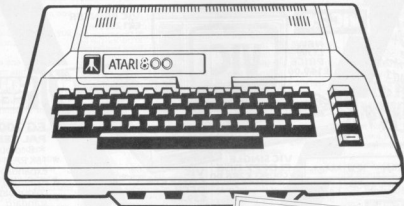
**Please include me in the Seventh Empire Competition.
The name of the tribe I will play in the game is:**

My name is:

Address

Telephone

WHAT A CHRISTMAS PACKAGE FROM COMPUTERS FOR ALL



ATARI 800
NEW LOW PRICE
£399.95

This Christmas there's a good time for all at Computers for All!
A full range of the world's best micros for you to give up watching Television programmes and start writing computer programs!
There's still time to pick up a bargain by calling at our shop or phoning your credit card order. But do it straight away!
Everybody is after a new computer this Christmas... how about you?
INSTANT CREDIT AVAILABLE FOR CALLERS WITH CHEQUE OR CREDIT CARD

Post today, phone, or call at our shop

Post to Computers for All (V), 72 North Street, Romford, Essex. Telephone: (0708) 752862

Please rush me the following equipment:

- ... ORIC 48K @ £169.95 (inc VAT)
- ... BBC MICRO (B) @ £399.00 (inc VAT)
- ... DRAGON 32 @ £199.50 (inc VAT)
- ... MPF II @ £270.00 (inc VAT)
- ... ATARI 400 @ £199.95 (inc VAT)
- ... ATARI 800 @ £399.95 (inc VAT)

Please add Post and Packing to all orders @ £3.00

NAME _____

ADDRESS _____

Remittance enclosed \$ _____
Please bill my Access/Barclaycard/Amex
Card No: _____

**COMPUTERS
FOR ALL**

"THE SHOP WHERE PEOPLE MATTER"



CHROMASONIC PERSONAL COMPUTERS

01-263 9493/5

48 JUNCTION RD. ARCHWAY, LONDON N19 5RD Telex 22568

*The Home
Computer
Specialists*



INTRO OFFER!
VIC 20+
* Cassette deck * Intro
to Basic part 1
* Joystick
* 5 Blank
cassettes
£199

VIC 20
COMPUTER

**NEW
LOW
PRICE
£149.00**



**VIC PRINTER
£212.00**

80 Characters per line,
30 Characters per sec.,
Tractor Feed Dot matrix
printer.



**COLOUR
GENIE**

**EG 2000
PAL VERSION**

- * 8 colours
- * 16K RAM standard, expandable to 32K
- * Extended Microsoft colour basic standard
- * Typewriter Keyboard
- * CPU: Z80A/2.2 MHz
- * 3 Sound Channels
- * 40 Columns x 24 Lines

* Serial and Parallel I/O Ports
OUR PRICE £199



***** NEW *****

JUST RELEASED

**The 64
from
commodore**

64K RAM

music synthesiser

3-D effect

16-colour display

OUR PRICE £339



**VIC SINGLE
FLOPPY DISK**

OUR PRICE **£286.00**
174K Byte Storage Direct
Interface to VIC Direct
Compatibility with
printer

**VIC
CASSETTE
DECK**

£39.00

Free
cassette
with
6 programs
supplied

ACCESSORIES FOR YOUR VIC20

Super Expander High Resolution Cartridge **£31.00**
Programmers Aid Cartridge **£28.00**
Machine code Monitor Cartridge **£28.00**
16K RAM Cartridge **£39.00** 16K RAM Cartridge **£67.00**

**TONS OF
SOFTWARE**

For a copy of our
VIC list, containing
everything
you need for the
VIC computer,
send us
your coupon
NOW!

***** STOP PRESS *****

CARTRIDGES	VIC 20 GAMES	
VIC1905	"JELLY MONSTERS"	£18.23
VIC1914	"HINDSBORELAND"	£23
VIC1917	"WINDING CASTLE"	£10
CASSETTES	VIC1301	"OUTWASTON"
VIC1302	a) "NEW YOUR OWN 10"	£10
VIC1311	b) "WASTORPINE"	

Post to CHROMASONIC Personal Computers,
48 Junction Road, Archway,
LONDON N19 5RD

TERMS OF BUSINESS: All prices inc. 15% VAT
Delivery charged at Cost. Prices valid for cover date of this mag.
Access and Barclaycard orders welcome.

I am interested in a home computer.

Please send me further details

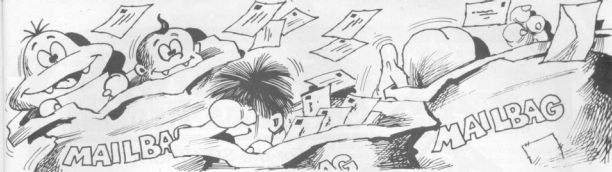
☐ VIC 20 ☐ DRAGON 32 ☐ COLOUR GENIE

☐ ADD-ONS ☐ SOFTWARE

NAME

ADDRESS

Please send me price No.
I enclose cheque/postal order for £.....



Please drop us a line at: Computer and Video Games, EMAP, Durrant House, 8 Herbal Hill, London EC1R 5JB.

BIRTHDAY BOUQUET!

Dear Editor,
Happy first birthday from one of the countless satisfied readers — and shame on you for not mentioning it yourselves!

Yes, it was one year ago that *Computer and Video Games* first hit our news stands. And what a year it's been! Twelve excellent games programs for the Atom, Fabulous articles and artwork, great reviews and your little cartoon Bugs provide good humour (despite their nasty habits).

I hope you continue for many more years to come with your very high standards of publishing. And as long as you keep printing games for the Atom you'll have at least one loyal reader.

Keith Robertson,
Carshalton,
Surrey

PIMANIA PIMANIAC!

Dear Sir,
I am a Pimaniac! And I'm answering your call in the November issue. First, let me say that Pimania is absolutely fantastic — and with the golden sundial as its prize I have become completely hooked on it.

It might be useful for other readers to note that the way to move around the world of the Piman is completely logical, if you take good notice of the clues given just after you get into the program. Unless you spot this you could be wasting days going up blind alleys!

The Piman isn't really as horrible as he makes out, if you learn to treat him right. You'll have to learn what takes his fancy in different parts of his world, and what upsets him.

To tell the truth I still

haven't got a clue where the sundial is — but as long as Pimania continues to keep me rolling about with laughter I don't care.

My friends who have other machines want to know for what other micros Pimania will be produced and when.



While I think that it is good that you will be giving readers hints and tips in your pages. I hope you don't give too much away — it's taken some of us a long time to work out the mysteries of Pimania.

Well done *Computer and Video Games* for bringing us news of Pimania first!! Keep up the good work.

Raurie Morris,
Streatham,
London.

Editor's reply: The micros next in line for Pimania are the Dragon 32 and BBC Model B planned sometime for the New Year.

AND HERE'S ANOTHER!

Dear Pi-men,

Does the line Pimania song "I haven't got a lot of hair" refer to Clive Sinclair, and is the world of the Piman inside uncle Clive's head? Also is it the man himself in the background at the end of the song? Also is it Ian Dury who does the vocals?

Does the can of worms refer to one of your earlier sets of games and can I use the megaphone anywhere? Is the Pi symbol significant?

Lastly, when the Piman tries to sell me a tee-shirt, is this part of the game or are you just trying to get more money out of me? By the way, I have become completely addicted to the search for the golden sundial of Pimania, and I'll find it if it's the last thing I do!

Jennie Barratt,
Kowloon,
Hong Kong.

Editor's reply: Here are the answers to your questions from Automata.

No.

Who knows what's inside Clive's head?

If we had asked him to the recording studios he would have turned up 18 weeks late!

No comment.

Yes.

Yes.

Totally!

Of course it's for more money.

SOFTWARE WORRIES . . .

Dear Sir,

I own a 32K Atari 400. I'm becoming very concerned about the service being offered by some software firms. Quite a number of firms are offering programmes for the Atari knowing, and freely admitting that they have no stocks at all of the material and in some cases they do not even have a delivery date for when stocks will be available.

In some cases the problem is that the firm, in all innocence has misjudged demand or has been let down by a supplier.

However, in some cases failure to supply appears so common that the suspicion must arise that virtually no stocks are held and the firm waits for a customer's order

before contacting the wholesaler.

Having parted with your money, getting hardware repaired or defective software replaced is not easy. At the time of writing my Atari has been away a month having a "minor" fault repaired.

M. P. Nicholson,
Bridgwater,
Somerset.

QUESTIONS ANSWERED

Dear Sir,

I have a few questions to ask about the ZX81. The first question is whether or not you can invert the screen so it prints black on white and if so how do you do it? Also there is the question of where you can get a cheap hi-res graphics for?

I have thought of a great idea! Why don't you have a place in your magazine where people can send in small programs they have written for small amounts of money?

Finally, I am thinking of buying a ZX Spectrum and selling my ZX81. What would be the highest amount of money I could get for it?

J. Morton,
Bishop Auckland
Co. Durham

Editor's reply: To invert the screen, try the graphics toolkit from JRS Software or even the 4K graphics ROM from DK Tronics. This will also provide hi-res graphics. Kayne also do a cheap hi-res graphics board.

Many of our contributors tell us we already pay "small amounts of money" but if anyone would like to send in small routines for getting around certain problems we will look at the possibility of starting up such a page. Finally, I think you could expect around £25 for your ZX81 Mr Morton.

The SHIVA Christmas Hamper

For the SPECTRUM

By Ian Stewart & Robin Jones

Easy Programming for the ZX Spectrum £5.95

Computer Puzzles: For Spectrum & ZX81 £2.50

Machine Code and Better Basic £7.50

Cassette: Spectrum Special 1 £4.95

By Martin Wren-Hilton

Games to Play on your ZX Spectrum £1.95

~~£23.85~~

£15.75
incl. p. & p.

For the ZX81

By Ian Stewart & Robin Jones

PEEK, POKE, BYTE & RAM: £4.95

Basic Programming for the ZX81 £2.50

Computer Puzzles: For Spectrum & ZX81 £7.50

Machine Code and Better Basic

By Martin Wren-Hilton

The ZX81 Add-on Book £5.50

~~£23.85~~

£14.75
incl. p. & p.

Order the complete hamper and
save yourself a packet!

Or make up your own with any 3 items
for £10.50 (incl. p. & p.)

Offer open until 31st January 1983

All books and cassettes are also available individually
at the normal published prices.

Hampers will be dispatched from
1st December onwards.

ORDER FORM

Please send me a SPECTRUM hamper, at £15.75

Please send me a ZX81 hamper, at £14.75

I wish to make up my own hamper with the
following, at £10.50

I wish to order 1 or 2 items only, at the normal
published price:

Tick here

☐
☐
☐
☐
☐

£ _____

£ _____

NAME

ADDRESS

I enclose a cheque for £

Please debit my Access/Barclaycard/American Express

Account number

Signature

Shiva Publishing Limited
4 Church Lane, Nantwich, Cheshire CW5 5RQ
Telephone: (0270) 628272





MAILBAG



THANKS FROM A TEXAN!

Dear Sir,
A big thank-you *Computer and Video Games* for a program for my TI 99/4a. I am now buying your magazine not just skimming through it at a bookstall! I am certain many T.I. owners, there are a lot of us out here, will be doing likewise.

Will you be inviting programs suitable for the TI 99/4 or 99/4a? Stay on the Texas bandwagon.
Bernard Bailey, Althorne, Essex

Editor's reply: We are always interested in new and original programs *Bernard*. How about sending us some of your ideas.

MAGAZINE MOANS ...

Dear Sir,
I read with interest your article on the TI 99/4a home computer, but the reference to the 99'er magazine at the conclusion of the article was of particular interest — and inaccurate. I would like to take this opportunity to inform you and your readers that MPI of Cambridge Road, Barking are no longer supplying 99'er magazines and would urge them not to part with any money.

MPI said that they were returning my subscription. That was in August and I'm still waiting!!

I would like to add that since February I received only two 99'er magazines from MPI which in my book is absolutely terrible service.
M. K. Needham, Penarth, South Glamorgan.

SPECTRUM SHOWDOWN

Dear Sir,
I feel it is up to BBC and Atari owners to voice their feelings about some of the facts contained in the Sinclair Spectrum brochure inserted in many computer magazines.

For any person about to buy a computer, I can assure you that the extra money

spend in the purchasing an Atari 400 or a BBC micro is money well spent. Below, are some facts that are incorrect or omitted from the Spectrum brochure.

I own an Atari 400, and I have used a BBC, and they are amazing machines. Their graphics resolution is far superior to the Spectrums, and the comparison of the BBC and Atari's four sound channel to the Spectrum's channel (all one of them), is absolutely ridiculous.

The brochure claims that the Atari computer can only present five colours on the screen at once. This is not true. Three of Atari's fourteen graphics mode support 16 colours or luminances on a 18360 point array, without the intervention of the Atari's second micro, ANTIC.

Using ANTIC, it is possible to have all 128 colour

have to be purchased to bring the basic machine up to the standard of most computers.

I'm sure that the cost of adding colour graphics, sound channels, A to D, Hi-res graphics and a neat case to house the arrangement, to any of Sinclair's computers would easily outprice the £199 that the Atari 400 costs, not to mention the amount of processor time available from a single micro that has to look after all of this.

M. D. Caballero, Ramsgate Kent.

MICROVADER MUDDLE ...

Dear Sir,
I am still struggling with your July issue's Microvaders



luminance combinations on a 61440 array. ANTIC also offers fine scrolling windows, player missile graphics, display list interrupts etc.

Any combination of the fourteen graphics modes can be mixed on the screen, and all this leaves the 6502 almost totally free to execute the user's program.

Sinclair's brochure also omits the fact that the Atari has eight easily accessible A to D ports, four joystick ports (which can be used as outputs as well) and a cartridge slot for ROM based software.

This removes the necessity of the Sinclair computers expensive Christmas-tree arrangement of add on that

program for the ZX81. I have noted the corrections which you published in your August issue but I am still not getting it working. In particular line 18 is quite hard to read and I think my error may be in that.

W. Davison, Scotland.

Editor's reply: Some people do seem to have had difficulty with *Microvaders*, despite the other way we suggested they approach the program in our August issue's *Confessions of a Bug*. Line 18 may be the cause of the problem.

The third line of line 18 reads: '0028BA00'. This is correct but people are mistaking the 'B' with an '8'.

PRINTING PROBLEMS

Dear Sir,
I have a TRS-80 16K level 2 and have made quite a few good programs which I want to send in to your magazine. However, I have no printer and since most of them want the program printed out I have a problem.

So is there anyone out there who could print out the program for me?

Ian Bailey, Streatham, London.

SINCLAIR SOLUTIONS

Dear Sir,
I have recently purchased a Sinclair ZX81 and only just getting involved in the fun of operating it. It is a tremendous piece of equipment especially for its price. We are very limited here in the options available.

Even the range of cassette programs is very limited. If I had the finance available I would certainly like to set up a completely Sinclair based computer shop here in Christchurch.

However, back to reality. I read in your July issue — *Mailbag* the problem that D. McRiner was having with 'Edit' on the ZX81. It seemed related to time the computer had been on but could it be the problem experienced with the ZX when you are running close to its memory limit?

If this is the case then I would suggest the following:
1. Place cursor at the line requiring edit.
2. Depress 'CLS' then 'NEWLINE'.
3. Depress 'SHIFT/EDIT' together.

This will clear the screen and put the line that requires edit at the bottom.

Your magazine is excellent and very useful over here with the lack of software games etc. I am currently waiting the arrival of my 16K RAM and then I will be able to really get into some clever material!

John Mitchell, Christchurch, New Zealand.

COULD YOU BE A WINNER?

To turn your games program into a household name you need to be four kinds of expert.

You'll need to be an expert programmer and inventive designer in the first place.

Then there's the question of the manufacturing expertise necessary to ensure the quality of the tapes will give the best possible load for your prospective purchasers.

Marketing expertise will help put the best package around the tape and make sure that the program gets maximum exposure in the right media. Advertisements must be designed for real impact and a knowledge of which specialist press to place them in, would be handy.

And how about distributing the cassettes once the purchaser's appetite has been whetted. Getting them into the computer dealer shops, setting up a mail-order system.

Never realised how much work these software houses have to put in eh?

Well that's the promise we are tethering to our new **Games Program of the Year Competition**.

Starting in our December issue we are carefully sifting through your games listings, looking out for that program we consider to be something special. And come next November we will take the writer of the best games program we receive and hawk both him and his program around.

We will take him to a top software house and get their advice on tidying the program up, securing it against software pirates, giving it that final professional polish.

We'll have a top audio company brought in, to bring out the copies of your tape in prime condition ready for loading.

The next stage in the program hype will be to have a marketing company design an advert and advise on cassette packaging. Our top reviewers will help compose the instructions on the inside leaf of the packaging.

And then we'll throw the entire weight of *Computer and Video Games* behind the program and an advertising campaign in other com-



puter magazines aimed at giving it maximum exposure over the whole marketplace.

We'll have the cassette distributed, set up a mail order system to deal with its sale. And at the end of the month, having fully emersed our winner in the tricks of the trade and given his cassette the sort of treatment even top software houses would struggle to equal *C&VG's* top programmer will be able to sit back over Christmas and wait for the money to come rolling in.

So start work on your next contribution to our games listing pages as soon as possible... after all last year's winner, Nibblers, was published in the very first issue!

MEET ARKRAIDER THE DUSTMAN

Our readers' special game of computer moderated space thrills, *Starweb*, is still producing thrilling reports of galactic intrigue.

This month we publish one we received from one of the universe's more distinguished beings. Arkraider the artefact collector. His tale of space pirate harassment of the galactic innocents is narrated by Jenny Parsons.

It's a hard life for a bumbling old fossil like me, you know, trundling around the universe collecting up unattended artefacts. Well, if others are careless enough to leave them lying about...

By the way, I'm Arkraider, archaeologist extraordinaire — a sort of galactic dustman. My sole aim is to load rare treasures on to my somewhat battle-scarred and

dilapidated fleets and creep off to some planet where I can gloat over my acquisitions.

Trouble is, there are constant interruptions. Pirates! Dastardly bands of do-badders, always plundering, more evil than Long John Silver and Captain Hook combined.

The universe is plagued by an overdose of bad guys. Berserkers, intent on blowing my world to smithereens and sending vast hordes of rampaging robots to terrify my peace-loving people. Empire Builders, fiendish, power-hungry magnates on perpetual ego-trips. They remind me of the American Presidents on Earth, years ago...

But, I digress. There are some half-way decent chaps about. Merchants, for example. Hyperspace hypermarketees, these are relatively harmless.

Mind you, like all salesmen, once they get their foot in the door... The Apostles are pretty bearable too, although, when I arrive home after a gruelling voyage, to find my people in the grip of religious mania, it becomes very wearing.

I've had some experiences in my time. Once I found a wonderful prize, the fabled and mystical Black Box! Imbued with legendary powers, was I in luck? No, I wasn't. It disappeared, before my incredulous eyes. Vanished into the great void. On more than one occasion I've been ambushed en route to some fabulous jewel and left for dead.

What's that you said? The Ancient Pyramid has been sighted on the other side of the galaxy? I'm off!

TIM THE INVENTOR'S FOUR-WHEELED WINNER

Buggy is a design for a machine code arcade-type game requiring skill and quick thinking.

It is the invention of Tim Selkirk of Bunny in Nottingham and was judged to be the pick of the bunch of program ideas sent in by you for our September Design a Sinclair Program Competition.

Tim has won for himself a set of five ZX81 Psion cassette games and a Sinclair printer.

He has also earned the chance of a trip down to London to look around Psion's software house and see their game design team in action and talk about Buggy with them.

Charles Davis of Psion, who was part of the judges panel who checked over the entries for the competition explained the strengths demonstrated by Buggy.

"We felt Buggy deserved to win because Tim had considered the practicalities of putting his game onto a computer, in some detail.

"He clearly appreciated what could and could not be done and went further and suggested details of the application. He has developed the makings of an amusing and exciting game. The presentation is excellent and Buggy certainly has a realistic potential."

The Buggy in the title, moves over a scrolling landscape which includes a series of water jumps. The track is produced randomly at the right-hand side of the screen and by changing gear and speed the car manoeuvres over the terrain, picking up speed for the water jumps.

Although the idea sounds similar to one of the current arcade games,

its way of coping with the jump problems is quite original and Tim has gone into some depth working out the best way to approach the problems involved in the game.

Buggy sounds a fascinating game, and if anyone out there would like to try and use Tim's many diagrams, flow-chart and extensive thoughts on the game, to turn it into a working program, please send a stamped addressed envelope into us and we will dispatch a copy of Buggy rules to you.

Four runners-up in the competition will also receive the five Psion ZX81 cassettes as a prize.

The runners-up are: Maggot Mania by Paul Dobson; Hang Glider by Bernard Isherwood; Tightrope Walker by D.M. Harris; and Strategic Command by Ben Bryant.

PUZZLING SOLUTIONS

We thought we'd catch a few of you out with our sneaky Mastermind Competition in November but you were up to the challenge.

The vast majority of entrants spotted that Puzzle C had been altered to make it possible.

First three out of the hat with all four answers correct were: George Stout, The Walk, Potters Bar, Herts; Ivor Davies, Bryn Road, Brynaman, Dyfed, and Robert Funai, Craig Court, Girvan, Ayrshire.

Congratulations and Invicta Electronic Masterminds are on the way. If you can shoot down the invad-

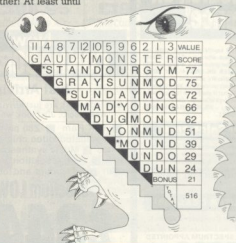
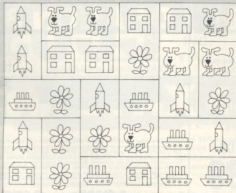
ers in Space Attack on this month's Puzzling pages, you could win a Computer Games' hand-held space invader game. We want your entries in by January 14th at the latest and the first three with the lowest possible solutions will receive the prizes. Full details on page 72.

Right, for those of you who complained that they read the November issue's Puzzling answers before they got a chance to try the puzzle... read no further! At least until

you have glanced at our Gaudy Monster and Omnidose brain-teasers.

If you're still with us I assume you have already looked at pages 72 and 73. Here is a sample solution for Gaudy Monster which scores 516 points, let us know if you have a better score.

And left are the dominoes, successfully pieced together from Mr Wheel's diagram.



11	4	8	7	12	10	5	9	6	2	1	3	VALUE
G	A	U	D	Y	M	O	N	S	T	E	R	SCORE
S	T	A	N	D	A	O	U	R	G	Y	M	77
G	R	A	Y	S	U	N	M	O	D			75
S	U	N	D	A	Y	M	O	G				72
M	A	D		Y	O	U	N	G				66
D	U	G	M	O	N	Y						62
Y	O	N	M	U	D							51
M	O	U	N	D								39
U	N	D	O									29
D	U	N										24
B	O	N	U	S								21
												516

SPECTRUM

Shop NEWS

New Spectrum Centres now at

**HORNCHURCH
ROCHFORD
GT. YARMOUTH
NEW MALDEN
LONDON W1
and just opening or
opening soon in
DUMFRIES
IPSWICH YORK
LONDON SE15
KILMARNOCK**

**We won't
be beaten on
price!**

SPECTRUM is a rapidly expanding group of independent retailers who specialise in selling home computers. Our group policy is simple - **WE WON'T BE BEATEN ON PRICE!** - our BULK BUYING ensures this. We select and buy the best and pass the savings on to YOU, the customer. We GUARANTEE that if you find an item currently advertised and in stock at another dealer and at a better price than ours - **WE WILL MATCH THAT PRICE ON THE SPOT.**

After Sales care

SPECTRUM service centres will ensure that should your machine 'go down' we will get it running again as quickly as possible. We also offer extended warranties at reasonable prices too! ask your SPECTRUM HOME COMPUTER CENTRE for full details.

COMPUTER DEALERS!

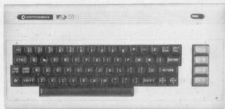
(or prospective Computer Dealers!)

If you would like to know more about becoming a SPECTRUM APPOINTED DEALER on an exclusive area basis, please contact MIKE STERN or ALAN WARREN on (07073) 34761.

Spectrum (U.K.) Ltd.,
Buryfield,
Walsley Garden City, Herts.

Commodore VIC-20

Now a top quality home/business micro for the price of a games machine.



Sensational **NEW LOW** price

£139.90 INCLUDING VAT

(£121.65 Excluding VAT)

	Ex. VAT	Inc. VAT
VIC C20 cassette unit	£34.00	£39.10
VIC Printer	£185.00	£212.75
VIC Single floppy disk drive (15")	£280.83	£298.95
3K RAM	£34.00	£27.40
8K RAM	£34.00	£39.10
16K RAM exp. cartridge	£50.00	£67.85
Super exp. Hi Res cartridge	£27.50	£31.63
Joystick	£6.52	£7.58
Games paddles	£11.74	£13.58

	Ex. VAT	Inc. VAT
Programmers Aid cart.	£27.50	£31.63
Machine Code	£27.50	£31.63
Basic (1)	£13.00	£14.95
BOOKS		
Learn Computer Programming with the Commodore VIC	£1.35	No VAT
VIC Revealed	£18.00	No VAT
VIC 20 Prog. Reference Guide	£14.95	No VAT
VIC Computing Magazine	£0.95	No VAT

The VIC-20 represents superb value-for-money from SPECTRUM. A truly expandable computer system which can be as simple or as complex as your needs require. Ideal as a home micro with a large number of educational and games cartridges available. Equally, with additional memory expansion, a disc drive and printer, it becomes suitable as a small business system, powerful enough for stock control, book-keeping and payroll generation.

■ Memory expandable to 32K ■ High resolution (full PET type) graphics ■ 16 Screen colours and 8 border colours ■ Plugs in to your T.V. or monitor ■ Add Disk Drive & Printer for impressive 170K Byte system ■ Can act as an intelligent terminal for a larger computer.

..... STOP PRESS
**SUPER X2
64K DYNAMIC
RAM PACK for VIC-20
EXCLUSIVE TO SPECTRUM!**

Unbelievable-but-true, now you can upgrade your VIC-20 from 3.5K to a massive 67K RAM. Enables you to load up to 8 games or programs at a time & still select which one you wish to use. Can be used in conjunction with other expansions to increase total memory up to 152K using the VIC memory expansion board. The SUPER X-2 will make your VIC-20 the biggest little micro in town!

Spectrum LOW price

£114.94 Inc. VAT

(£99.95 excluding VAT)

New! COMMODORE 64

Just Arriving

Limited stocks are just arriving of this super new micro. Just look what it offers!

- 64K Ram ■ Z80 processor option
- Dedicated video chip ■ Sprite graphics
- Music synthesizer ■ Prestel link
- High resolution graphics (320 x 200) ■ 16 colours and lots more.

Spectrum LOW price

£344.99 INC. VAT

(299.99 excluding VAT)

The ideal family computer! DRAGON 32



**HURRY!
LIMITED
STOCKS
ONLY
LEFT!**

Unbelievable value at only £173.00 from SPECTRUM! British built and designed it's one of the most impressive micros to appear for quite some time. Extensive facilities include highly advanced colour graphics, just look at this top specification. Powerful standard 32K RAM (expandable to 64K Bytes) ■ 9 Colours ■ 9 resolution Display ■ Extended Monochrome colour BASIC (as standard) ■ Advanced sound with 6 voices ■ 255 tones ■ Professional style editing, e.g. extract line, auto find repeat ■ Professional quality keyboard ■ Centronics Parallel printer interface ■ Serious programmer's choice - the BASIC on this machine is similar to that found on machines costing 3 times the price! ■ Uses almost any cassette recorder ■ Standard for handling ON TAP.

Spectrum LOW Price **£173.00** Price Inc. VAT

Plus! A wide range of games, educational & personal finance carts. available

ATARI

800 16K RAM

Sensational
new **LOW** price

ATARI 800



Here's a tremendous opportunity to trade in your old Micro Computer at SPECTRUM and take a full £40 off the price of the superb ATARI 800. Yes, for a strictly limited period, SPECTRUM will allow £40 for any micro, your ZX-81 (or even your IBM!) etc., whatever the age whatever the condition, when traded-in against a new ATARI 800. The ATARI 800 features a typewriter keyboard for fast and easy data entry. It has a 16K memory that can be easily expanded to 48K with convenient, slip-in ATARI Memory Modules. So you have more power available to run more sophisticated programmes. The ATARI 800 is expandable which means you can build the computer system you want today, knowing that it will grow to meet your needs tomorrow. You can add printers, programme recorders, disk drives and more. Call into your nearest SPECTRUM centre and ask to see the ATARI 800 today.

Sensational NEW LOW Price

£399.99

INC.
V.A.T.

(£347.82 excluding VAT)

Sensational

£40

TRADE-IN ALLOWANCE
on your old computer
when you purchase an
ATARI 800
from Spectrum

HURRY!

This offer is for
a limited period
only.

(Offer Ends Dec. 24th 1982)

Other ATARI equipment



ATARI 400
16K RAM

£198.95

INCLUDING V.A.T.
(£173 excluding V.A.T.)



ATARI
THERMAL PRINTER

£198.95

INCLUDING V.A.T.
(£173 excluding V.A.T.)



ATARI
DISK DRIVE

£299.00

INCLUDING V.A.T.
(£260 excluding V.A.T.)

Additional Equipment	INC. VAT	EX. VAT	Paddles (Pair)	£13.99	£12.17	Books and Manuals		
Program Recorder	£49.45	£42.00	Joysticks (Pair)	£12.99	£12.17	Wiley Manual	£5.99	£5.21
Disk Drive	£299.00	£260.00	Printer Cable	£25.50	£24.78	Basic Reference Manual	£5.99	£5.21
Thermal Printer	£198.95	£173.00	RS232C Cable	£25.00	£21.74	Dos. 2 Manual	£5.99	£5.21
Interface Module	£135.00	£117.39	Monitor Cable	£25.00	£21.74	Operating System Listing	£11.99	£10.43
Accessories			Thermal Paper	£4.80	£3.48	Dos. Utilities Listing	£3.99	£3.47
16K Ram Pack	£65.00	£56.52	Diskettes	£21.99	£19.12			

FULL RANGE OF SOFTWARE AVAILABLE — SEE OUR 'SOFTWARE BEST SELLERS'

New! LYNX 48

Just look at this super new LYNX Micro — an incredible 48K of memory as standard and that's expandable to 96K, 128K, or even 196K! For just £225.00 INCLUDING VAT the LYNX is exceptional value and exceptionally versatile. All LYNX's 'add-on' connections are standard types. The massive memory and high definition colour graphics make it a top-value choice for the home or office (with 128K of RAM, the LYNX can become an 80 characters-per-line word processor!) Take a look at the LYNX — a memorable bargain from SPECTRUM, but please phone to check stock position before making a journey as this new machine is bound to be in great demand.



Spectrum **LOW** Price **£225** Including VAT
(£195.65 excluding VAT)

MORE SPECTRUM LOW PRICES

SPECTRUM

SOFTWARE

The Best Sellers from Spectrum

For ATARI

Cartridges	Inc VAT
New! JUMBO JT PILOT	£34.44
STAR RAIDERS	£29.99
MISSILE COMMAND	£29.99
CENTPEDE	£29.99
PAC MAN	£29.99

Cassettes

EASTERN FRONT 1841	£22.50
INVITATION TO PROGRAMMING (Part 1)	£19.95
INVITATION TO PROGRAMMING (Part 2)	£22.99
INVITATION TO PROGRAMMING (Part 3)	£22.99
SMOKER & BILLIARDS	£19.49
DARTS	£19.49

For VIC-20

Cartridges	Inc VAT
STAR BATTLE	£19.95
JELLY MONSTERS	£19.95
ADVENTURE LAND	£19.95
PIRATY COVE	£24.95
SARGON II CHES	£24.95
MOLE ATTACK	£19.95

Cassettes

INVITATION TO BASIC (Part 1)	£14.95
INVITATION TO BASIC (Part 2)	£14.95
SUPER WORM	£19.95
SPACE STORM	£19.95
FROGGER	£9.49
BBC "MASTERING"	£9.49
QUIZ MASTER	£9.49
NIGHT FLIGHT	£9.49
MYRIAD	£9.49

For DRAGON

Cassettes	Inc VAT
CSMOS INVADERS	£19.95
GHOST ATTACK	£19.95
CAVE HUNTER	£19.95
STAR SHIP CHAMELION	£19.95

Cassettes

GUEST	£7.95
MADNESS and the MINOTAUR	£7.95
SELECTION OF GAMES	£7.95
DRAGON MOUNTAIN	£7.95
FLAG	£7.95
SELECTION OF UTILITIES	£7.95

For SHARP MZ-80-A

Cassettes	Inc VAT
PAK MAN	£9.20
FROGGER	£9.20
FENDER	£9.20
TOMBS OF KARMAK	£9.20
GOLLUM	£9.20
ASTEROIDS	£9.20
MZ OTHELLO	£12.88
BOMBER	£9.20
SPACE INVADERS	£9.20
CHES	£16.48

For TEXAS

Cartridges	Inc VAT
TI INVADERS	£18.95
BLASTO	£22.95
MUNCHMAN	£26.95
CHES	£35.95
ATTACK	£22.95
ZENO ZAP	£22.95
SOCCER	£22.95

Cassettes

OLDSIES but GOODIES (1)	£9.50
OLDSIES but GOODIES (2)	£9.50

For SINCLAIR

Cassettes	Inc VAT
FLIGHT SIMULATION	£5.95
SPACE RAIDERS & BOMBER	£4.75

Plus a large selection of games from £3.95

Inc VAT

SEIKOSHA

GP-100A Graphic Printer



Now a top quality graphic printer at a price you can afford. The SEIKOSHA GP-100A - Terrific value at under £280 from SPECTRUM - Standard Electronics compatible interface for easy link-up with most micros. ■ Full graphics capability. ■ Printing speed: 30 characters. ■ Double width character output under software control. ■ Graphics, character and double width character can be intermixed on same line. ■ Paper width adjustable up to 18" - tractor feed. ■ Print positive addressable by character or dot.

Spectrum LOW price £189.00 Price inc. VAT £217.35

Also Available	EX VAT	INC. VAT	EX VAT	INC. VAT
GP-100VC (for VIC-20)	£189.00	£228.85	APPLE SERIAL	£45.00
GP250X 50pps	£230.00	£284.50	APPLE GRAPHIC	£55.00
Optional Interfaces for GP-100A/GP-100VC			VIDIO GENIE	£36.00
HS172	£60.00	£80.50	Cables for BBC	
MZ80-A	£70.00	£89.50	MICRO, ACORN, DRAGON	£18.00

EPSON PRINTERS

Chosen by SPECTRUM for their reliability, the superb new top quality graphic printers from EPSON. New features include super & subscripts, underlining & deletion. If you're looking for an up-market printer at a down-to-earth-price, call in and see the EPSON range at SPECTRUM.

Model	EX VAT	INC. VAT
MX80 T2	£329.00	£379.35
MX80 FIT Type II	£380.00	£424.35
MX100 Type II	£480.00	£539.35

Please see your SPECTRUM dealer for prices of INTERFACE/CABLE options.



BOOKS

We stock an extensive range of books to help you. Here are just few to whet your appetite.

CP/M Handbook	£11.50
SUN T	£9.65
Programming the 280	£11.95
Programming the 6502	£10.75
Your First Computer	£7.75
BASIC Handbook (2nd edition)	£14.95
A-Z of Computer Games	£9.40
Atari BASIC	£5.95
Basic "BASIC"	£9.95
BASIC Computer Games	£8.95
BASIC Computer Programs for Business (VOL I)	£8.55

NO VAT ON BOOKS

ACCESSORIES

SANYO

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

PRINCE 12"

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

Green Monitor

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

Price 12" Monitor £86.00

Saves 12" SM 12H £84.00

Saves 14" SCM 14H

Colour £350.00

£482.50

£482.50

£482.50

£482.50

£482.50

£482.50

£482.50

SINCLAIR ZX-81

Now available from SPECTRUM centres the top selling SINCLAIR ZX81

INC. VAT

SINCLAIR ZX

£49.95

16K RAM pack

£29.95

ZX Printer

£59.95

Cassettes available from £3.95 please ask your local SPECTRUM dealer for details.



Stop Press

Coming soon in '83

ORIC 48K

and

JUPITER ACE

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

Check with your local SPECTRUM for further details

NASCOM

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

SPECIAL EDITION

For the computer enthusiast - if you're looking for a machine to take you way beyond the sphere of a normal than you need look no further than the NASCOM SPECIAL EDITION.

Spectrum LOW price £494.44

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

Inc. VAT

EX VAT

48K RAM Plug in board

£149.50

£149.50

£149.50

£149.50

£149.50

£149.50

£149.50

£149.50

£149.50

£149.50

Sensational SCOOP Offer!

LESS THAN WHOLESALE PRICE!

SHARP PC-1211

Pocket Computer
complete with
Cassette/Printer interface



Here's a tremendous SCOOP OFFER from SPECTRUM - the SHARP PC-1211 Pocket Computer, a ready-to-use set up complete with printer & a cassette interface. And ALL for an amazing £95.95 ex. VAT. THAT'S LESS THAN WHOLESALE PRICE! Employing BASIC language. Complex interest rates, budget, statistics, engineering and architectural formulae can be handled quickly and easily. Connects to almost any cassette recorder. If you're looking for a pocket computer you must take a look at this sensational offer from SPECTRUM - FIRST!

Incredible
Value from Spectrum!

ONLY
£95.95
ex. VAT
£119.28 inc. VAT
COMPLETE

SHARP PC-1211

Pocket computer complete with CE-121
Cassette Interface

■ Ideal for SCHOOL, OFFICE or HOME use ■ High performance functions with easy to understand BASIC language ■ Cassette interface allows easy connection to almost any tape recorder for storage of programmes and data. etc. ■ 24 Digit alphanumeric dot matrix display ■ Plus many more top features.

Spectrum LOW price **£59.95** ex. VAT



£68.42
inc. VAT

FREE!

£75 WORTH
of software

with every MZ80A
purchased

SHARP MZ-80A

Desk top genius - the all-in-one SHARP MZ-80A. A personal computer designed with the serious user in mind, ready to run the moment you get it home. Built-in keyboard, CRT 8" display and cassette data storage with 48K RAM. The BASIC with extra useful additions, offers quite a powerful micro for the home or business. ■ 4K Byte ROM + 48K Byte RAM + 2K Byte Video RAM ■ ASCII profiled keyboard + numeric pad ■ 2 page Video RAM allows screen to be scrolled up or down. ■ CP/M available.

Spectrum LOW price **£475.00**

SHARP PERIPHERALS FOR MZ80A

Two floppy disk unit (10, 100, 5.25, 5.25)
Floppy disk unit (5.25) only
Single floppy disk unit only
Floppy disk interface card
Floppy disk cable
Master diskette and manual
Expansion unit (disk drive or printer)

EXC. VAT INC. VAT
£689.00 £792.35
£390.00 £678.50
£400.00 £680.00
£100.00 £115.00
£14.99 £27.50
£31.80 £35.80
£100.00 £115.00

MZ80 P5 Printer
MZ80 P6 Printer
MZ80 P4 Printer
Printer interface
Parallel interface Card
Assembler Tapes & Manuals
FD05
MK80K or MZ80A Converter Taps

EXC. VAT INC. VAT
£240.00 £401.30
£400.00 £470.35
£745.00 £886.75
£30.00 £34.50
£23.80 £27.85
£48.00 £61.00
£42.00 £48.30
£85.00 £97.95
£10.00 £11.50

Spectrum Computer Centres have no connection whatsoever with the ZX-Spectrum Computer manufactured by Sinclair Research & Ltd.

There's a Spectrum Centre near you ...

ALFREYTON

Gordon Harwood, 50/71 High St. 0773 820101

ASHFORD

Ashford Computer Centre, 2 Station Parade, Clarence Rd. 07945 4400

BANBURY

Computer Plus, 2 Church Lane (0291) 55889

BASILDON

Geoffrey's, 28-32 East Walk, Town Centre. 0181 285379

BASINGSTOKE

Fisher's, 1/3 Market Place 0256 22079

BATH

Software Plus, 12 York St. 0223 61010

BIRMINGHAM

Sharwood, 6001 Western Avenue, 021 236 7211

BRADFORD

Photohats, 10 Cheapside 014 389589

BRIGHTON

Captains, 1 Queens Rd. 014 353100

CAMBRIDGE

Cameras Area (Micro Computer Division), 38 High St. 0224 65440

CAMBRIDGE

AP Ltd., 12a Kings Parade. 0223 46097

CANTERBURY

Kent Micro Systems, Conquest House, 17 Palace St. 0227 50200

CARDIFF

Rendell Co., 10-22 High St. 01492 321360

CHELMSFORD

Maxon Systems Ltd., 5 Broadfield Rd. (0245) 354595

COVENTRY

Coventry Micro Centre, 31 For Green St. (0203) 54943

DARLINGTON

McKenna & Brown, 101 Sandgate. (0275) 56744 (Just Opening)

DERBY

C.T. Electronics, at Camera Theatre, The Spur. 0332 44760

DONCASTER

Computer Computer Centre, 13 Northfield Rd. 0302 67135

DUMFRIES

Veasels, 71 English St. 0207 4547 (Just Opening)

EDINBURGH

The Silicon Centre, 6-7 Argyll St. 01 557 4448

GLASGOW

Victor Morris Ltd., 140 Argyle St. 041 221 8068

GLOUCESTER

The Model Shop, 79-81 Northgate St. (0453) 540031

GUIDFORD

The Model Shop, 23 Swan Lane. (0757) 0482 2015

HARROW

Camera Area (Micro Computer Division), 24 St. Ann's Rd. 01-427 1441

HATFIELD

Microworld, 2 Crowfoot Rd. (0767) 41317

HORNCHURCH

Channel One, 174 High St. 040 24 7912

HULL

The Computer Centre, (Humberston), 78 Andaby St. (0482) 2497

HYDE

Pace, 215-215 Market St. 061-369 1825

IPSWICH

Reynolds, 14 Green St. (0455) 5001

KILMARNOCK

Veasels, 49 Fargate 068 32175 (Just Opening)

LEEDS

Knox & High, 4 Lower Briggate. 011 431 4161

LEICESTER

Yeomans, 42-43 Belvoir St. 0533 54574

LONDON SE1

Vic Davies's, 6 London Rd. 01-487 6822 (Just Opening)

LONDON SE15

Spencer Davis, 210 Foreway Rd., New Eltham. 01-859 1518

LONDON SE15

Castlehurst Ltd., 152 Rye Lane, Peckham. 01-639 2205 (Just Opening)

LONDON N1

ASP Micro Systems, 105 Upper St., 1/10. 01-359 5095

LONDON N20

Castlehurst Ltd., 1291 High Rd. 01-465 2290

LONDON W1

Deven, 8 Edgware Road 01-724 2371

LONDON W11

Electroline, 129 Notting Hill Gate. 01-271 7029

MACEFELD

Camera & Computer Centre, 118 Mill St. 0625 17468

MANCHESTER

Lomas Ltd., 8 Exchange St. St. Ann's Sq. 061 632 6167

MIDDELBROUGH

McKenna & Brown, 180 Linchway. 0642 248345

NEWCASTLE-ON-TYNE

Newcastle Camera & Computer Mart, 16 Northumberland St. 0632 327445

NEW MALDEN

Burney Micro Systems, 37 High St. 01-942 9470

NORTHAMPTON

Basic Computer & Systems Ltd., 12 Kingsway House, 0604 75740

NORTHWICH

Camera & Computer Centre, 3 Town St. (0890) 44529

NOTTINGHAM

Camera Computers, 8/10 Trinity Walk. 0602 42912

OLDHAM

Home & Business Computers Ltd., in store at The Mall, 118 Elbow St. 061 431 1005

PAIGTON

Deven Computers, 81 Upper Weaver Rd. (0803) 33003

PENBROKE

Rendell Co., 13 Main St. 064 68 2676

PRESTON

Widdow's, 45 Fothergill St. 0777 554754

KILMARNOCK

David Saunders Computer Centre, 3 York Hall Place. 074 588716

ROCHFORD

Chained One, 17 Garden Cross Parade, Ashbourne Rd. 0782 50455

RUGBY

The Rugby Micro Centre, 9 11 Regent St. 0189 70522

ST. AUSTELL

A & C Computers, 11 St Austell Rd. 0750 44483

STAFFORD

Computers, 10 Forge St. (0785) 41899

TEDDINGTON

"Andrews", 40 Broad St. 01-877 4716

WALLINGTON

Surrey Micro Systems Ltd., 53 Woodside Rd. 01 447 5458

WATFORD

282 Micro Systems Ltd., 94 The Parade, High St. 0932 29662

WEST BROMWICH

Bell & Jones, 29 Queens Sq. 021 563 9025

WIDNES

Computer City, 76 Victoria Rd. 051 425 3323

WIGAN

Widdow's Ltd., 11 Meares St. 0942 44382

WORKING

Wargers, 71-72 Commercial Way, 0482 61061

WORCESTER

David Waring Ltd., 1 Marrow House, High St. 0905 27051

DR. YARMOUTH

Teep Head Electronics, 264 Market Gate Shopping Centre 0403 2143

YORK

York Computer Centre, 35 Clarendon Avenue, 0304 641682 (Just Opening)

Up to £1000 INSTANT CREDIT with a SPECTRUM CHARGECARD

With a SPECTRUM CHARGECARD you choose the credit limit to suit YOU, up to a monthly payment of £10 given you £200 credit. Ask your nearest SPECTRUM COMPUTER CENTRE for written details on how to apply for your SPECTRUM CHARGECARD - NOW! (Typical APR 30.6%)

COMPUTER DEALERS!

If you would like to know more about becoming a SPECTRUM APPOINTED DEALER on an exclusive area basis, please contact MIKE STERN or ALAN WARREN on (07072) 34761. Spectrum (UK) Ltd., Burrowfield, Welwyn Garden City, Herts.

V.A.T.

You will see that we quote our prices both including VAT and excluding VAT - as hidden 15% to suddenly appear 10% later but this makes our prices easier to compare with our competitors.

MAIL ORDER

When it comes to MAIL ORDER our service is FAST! with SECURICOR DELIVERY! to anywhere in the British Isles. Ask your nearest SPECTRUM dealer for further details at time of ordering.

'News Sire! The alliance between the Water Empire and the Sun Beings has crumbled, war is declared.

Three of your fleets are currently in Water Empire systems encircling sun-rich Rolek, this could be the chance you have yearned for. Other tribes affiliated to the Water Empire also feel the time is right, shall I give the orders to grab our share of Rolekian plunder?

The galaxy of the Seventh Empire is torn by war and piracy. The merchants are as coldly calculating as the war fleets. Playing off warring empires against one-another, a cunning commander can keep his tribe in

profit. But he must keep a close eye on the way the diplomatic wheels are turning, how other tribe's fleets are responding.

He must know when to plunge into the risks of battle and try to alter the galactic map and he must use the Gateways wisely, running merchandise or raiding the profitable routes.

The Seventh Empire is a new way to play a game. It is quite unique in the history of publishing, computing and gaming. This one-way play-by-Mail gaming is the brainchild of Mike Singleton who runs Britain's top computer moderated game, Starford.

The players send in orders for

their fleets by post but get feedback through the pages of this magazine and it can cater from two to 10,000 players. At our end it's run by a Pet computer and all the player's orders are input into it each month.

It works out how their interaction affects the galaxy's 100 centres of population and industry. The result is displayed in the following month's issue by use of a map showing how the fleets have moved. This is not information on each individual fleet but the numbers to be found on each star and how that has altered its trade index. With a diplomatic diagram showing how the empires are shaping up for war;

a Gateway route table displaying the profits on each route and some battle reports from the areas of galactic conflict, the player can find out exactly how his fleets fared and plan out his next movement commands.

The rules are set out briefly here, but each Seventh Empire player will be sent a detailed rulebook before the game gets underway in our February issue. You'll find it easy to understand the rules and simple to play but very difficult to win and work out tactically. Remember, there is no luck in The Seventh Empire — only foresight and galactic understanding! An entry form is on page 4.

THE SEVENTH EMPIRE

There are a 100 named stars in the galaxy, arranged on a 10x10 square grid, representing major centres of galactic society.

Each star system belongs to one of seven empires: Water (blue), Bloodline (red), Sun (yellow), Amythest (purple), Dead (brown), D'Taan's Science Empire (green) and the Pirate Empire (orange).

There are four types of stars: **Gateway Stars** provide rapid transgalactic movement; **Energy Stars** contain planets rich in the stellar energy used for ordinary inter-system space travel; **Gem Stars** produce the amythest-like crystals which are used to harness stellar energy; and **Elixir or Life Stars** contain the sun polyps which can turn unusable planets into those capable of supporting life.

Each player has seven starfleets under his control and each of these is considered the property of the empire from whose star it starts its turn. A player can have starships in as many empires as he wants and by sending these ships on missions from star-to-star, he tries to build up his profits.

GAME TURNS

A simple turn sheet must be sent in by the player, every month which records where he wants his fleets to travel to. And whether each one should be involved in battle, piracy, trade, raiding or just moving from star-to-star.

These orders are processed by computer so that all movement happens simultaneously. A printout of the galactic map is produced, each player's individual record updated and the winner of that turn found.

From the information given in that issue of the magazine, the player can calculate what happened to his ships and what profit he made.

You should keep a copy of your moves for this purpose. The computer keeps its own records but if you miscalculate, you could be playing with delusions of grandeur.

STAR TYPES

The four star types are represented by different symbols on the galactic map and each has a trade value: Gateway Star = 50, Energy = 100, Gem Star = 150 and Elixir Star = 200. Each star is in a square on the map, the colour of the square indicates which empire it belongs to.

Stars represent whole systems which have been colonised and each of the 100 is considered by traders to be specialist at providing one of the four galactic commodities which produce real profits. A symbol shows which star type each is.

The star name is what you should use in your orders to show how you intend to move. Other data on the star includes the number of ships in that star system at the end of a turn (bottom left), and in the bottom right

is a number representing the **Trade Index** of the star for that turn, from which you calculate your profits (see example).

AT WAR

The seven empires are continually at war with one another. This is represented by a **diplomatic diagram** concocted of seven different coloured circles. It will be printed each month to show the empires at peace and those at war.

When two circles are joined by a line, those empires are at war with each other the following turn. Two empires, whose circles are not joined are at peace with one another.

The diplomatic diagram changes according to the last turn's events. Every empire checks on how many ships from each of the other empires, raided its stars. It then declares war on the empire which did the most raiding of its territory.

This empire responds by declaring war also. If there are two empires guilty of equal raiding then war is not declared. Careful study will help here.

The diplomatic diagram is important because it restricts the moves a player's fleets can make on the following turn. Trade and Movement cannot occur between stars of two empires at war.

Likewise, a fleet cannot be given an Attack order that moves it between the stars of two empires at peace.

MOVING OUT

Each game turn consists of two movement phases. In each movement phase you can move any or all of your fleets, so each ship has up to two movement orders. There are three basic ways to move.

- 1) **Travel Mode:** A fleet moves to any adjacent star, horizontally, vertically or diagonally. This mode is used in Trade or in Movement. This mode takes one phase to complete.
- 2) **Attack Mode:** A fleet moves to any adjacent star, horizontally or vertically but **not diagonally**. This mode is used in Raid or in Attack. This mode takes one phase to complete (see example).
- 3) **Gateway Mode:** A fleet moves from any Gateway Star to any other Gateway Star. This mode is used in Cargo (gateway travel), Jump (gateway movement) or in Plunder. Unlike the other modes of movement, this mode takes two phases to complete.

TRADING

The star Trade Index is the key to most profit in the game of The Seventh Empire.

Each star is given a fresh Trade Index each turn. A number of factors come into the calculation. Let's consider one star:

- 1) The total number of fleets leaving the star on Trade missions on both phases of the turn is the number of Buyers.

- 2) The total number of fleets arriving at the star on Trade missions on both phases of the turn is the number of Sellers.
3) Each star already has a Trade Value by virtue of its star type.
4) Trade Index = Trade Value x Buyers + Sellers.

The trade index is used when calculating the profit to be made on a Trade mission. Trading from star A to star B:
PROFIT = TRADE INDEX B - TRADE INDEX A.

If you go from a star with a low Trade Index to a star with a higher Trade Index, you make a profit. If you do it the other way round, you make a loss! (see example.)

Gateway trade (Cargo) does not influence the Trade Index and profits on this are calculated differently. You can still do ordinary Trade with a gateway star, however.

On each turn, an overall Raid Penalty is announced. It is used in calculating losses due to damage during a raid on an alien empire's star. It varies according to the number of players in the game, we will announce it each issue.

BATTLE ORDERS

Battles will be rare each game turn, but some obvious targets will present themselves each month. And, if successful, these can change the galactic map.

A fleet travelling from its empire to a warring empire can be given an Attack or Raid order. If an Attack order is given on the first movement phase, no subsequent order can be given to that fleet.

A fleet can only be given an Attack order on its second movement phase if it stayed in its own empire on the first phase. In both cases the Attack mode of movement is used. Fleets on Attack orders stay at the star they attack (see example).

The result of an Attack is calculated as follows:

- 1) Defending ships = number of owning empire's ships at end of turn.
- 2) Attacking ships = number of alien ships from all empires there on Attack orders from both movement phases.
- 3) The defender's ships are compared with the attacker's ships. Whoever has the most, wins. In the cases of a draw, the defender wins.

All the fleets of all the attackers and the defenders become the fleets of the victor. Any fleets from the losing empires

lose all their profits. Fleets on the victor's side gain an additional Battle Bonus.

FLEET ACTION

As well as moving between stars, a fleet is also given an Action order. These are as follows:-

Move — no action, just movement.

Trade — taking goods from one star to another.

Raid — plundering an alien empire's star.

Return — returning from a raid to own empire's star.

Attack — moving to an enemy empire's star for battle.

There are also the following actions which can take place when using the Gateway Mode of movement:-

FUMUS 13 808	LULIP 79 400	YANOK 48 458
VEPOZ 68 600	QATOT 16 600	HEZOD 72 112

Fig. 1

Fig. 2	1st Movement	phase	2nd Movement	phase
	DESTINATION	ACTION	DESTINATION	ACTION
FLEET 4 AT: Lulip	Qatot	Raid	Lulip	Return

in the example above are on star systems. These are six stars in close proximity whose solar systems are capable of supporting life in such quantity that the system is considered a trade

zone. The Heed system in Fig. 1 is a Gateway star represented by the asterisk in the centre. The 72 number represents 72 fleets currently based on planets in the system and the Trade Index is 112 for this turn.

Fumes and Vepoz are both Elvian stars (represented by the heart symbol) so no trade can take place when a ship moves between them. In Travel mode it is possible to move between Heed and Fumes. The first movement phase will take your fleet to Lulip. And then onto Fumes in the second movement phase.

Fumes, Lulip, Yanok and Heed are all in the

between two stars. No profit or loss will be made. Move orders cannot be given to a fleet travelling between two stars of empires at war.

A fleet travelling from a star of its own empire to the star of an alien empire can be given Raid orders. It must use the Attack Mode of movement and the Raid order must be given on the first phase of movement. On the second phase of movement the player must give a Return order to the ship, in which it must go to a star belonging to its own empire.

Profits are calculated as follows:-

T = Trade Index of raided star.

F = Fleets at raided star at end of turn.

R = Raid Penalty.

Profit = T - (F x R)

Baseline Empire. If a ship at Fumes wants to attack Qatot (Water Empire), it must travel in Attack Mode. It cannot go diagonally, so must pass through Lulip first. Even though Vepoz is the Dead Empire and star is currently at peace with the Baseline, that empire will not allow an attacking Baseline vessel to pass through its system on the way to attack Qatot. If a Lulip fleet wishes to Raid Qatot, it's first order will be DESTINATION: Qatot. ACTION: Raid. No second movement phase will consist of DESTINATION: Lulip. ACTION: Return (figure 2).

Qatot has an Energy star trade value of 100. 72 of the 16 ships which are there this turn are Buyers and only two ships left to sell. So the Trade Index for Qatot this turn is $100 \times 12 = 1200$. But a ship arriving from Vepoz which also has a trade value of 100, will not make any profit on the trip as $100 - 100 = 0$.

Return orders can only and must be given to a fleet which has just made a raid. It is like a Move order, carrying no profit, but it must be made on the second phase of movement and movement must be in Attack Mode. It must also be made to a star of the same empire as the star the fleet started its turn at (see example).

Battles can either profit the defender or the attacker. Fleets on the losing side lose all profits. Victors gain an additional bonus. Bonus = Losers' total profits/number of winner's fleets.

The Battle Bonus will be noted for each turn in the Battle Reports section.

If an attacker wins then each fleet profits as follows:-

Profit = Trade Index of star

attacked + Battle Bonus

A Stay order is just that, staying at a planet. Any illegal order will be changed to a stay order and no profit gained.

Stay orders have no effect on trade or profits but may effect battle.

GATEWAYS

A fleet moving in Gateway Mode between two stars can be given Cargo orders. This order has nothing to do with the normal Trade Index of the Gateway Stars. The profit is calculated as follows:-

Profit = $1000/\text{Sqr}$ (number of fleets using same trade route).

If the route a fleet is taking is Plundered all profits are lost.

With Jump orders no profit or loss is made — it simply moves!

A fleet moving in Gateway Mode between two stars can be given Plunder orders. If any other fleets are trading on the same route they lose all their profits. If no ships are trading on the same route then the Plundering fleet gets no profit. Any profit from piracy is calculated as follows:-

Profit = total traders' profit/number of pirates on route

The Gateway Route Table is a reference guide to the profits made by taking a particular gateway-gateway route. The star of departure is given by the row and the star of destination is given by the column. Cross-referencing these, you will find the box corresponding to travel between those two stars in that particular direction. This is the gateway route. The box will show one of two things:-

- (1) Black figures on white background = Gateway Trade Profit — no pirates on route.
- (2) White figures on black background = Pirate Profit — the profit each pirate on the route makes. Traders get no profit.

Each empire is run by vast computers, crossing the galaxy in huge ships which react to the data the tribes put into them. They are invulnerable and, if a star, that star cannot be taken in battle. They do not trade, battle or raid and can never end their turn in an alien empire's system.

Any fleet ending its turn at the same star as an Imperial Ship will have its profits doubled.

The richest player in each empire takes control of the imperial ships that turn. But there is one condition, the only players considered are ones whose fleets all belong to that empire.

NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS GAMES NEWS

SAVE THE FINAL FEW HUMANIDS

ABDUCTOR

The aliens are out to capture the last six remaining humanoids on planet X and it is your task to stop them.

They swirl down towards you looping-the-loop — like bugs hovering around a lamp shade — and then swoop down and grab one of the humanoids.

The humanoid is then carried dangling from the alien craft up towards the top of the screen where he comes to a sticky end. The aliens having extracted all the vital organs for experimental purposes then toss the skull down towards the planet's surface.

The aliens attack in five waves. If you manage to survive to the fifth wave you are awarded an extra gun — which you will need as the aliens multiply in numbers and also become much faster and difficult to shoot.

When the last humanoid has been abducted that marks the end of the human race so you are charged with a weighty task.

Abductor runs on an unexpanded Vic-20 and is the latest addition to the Llamasoft range of software for the Commodore machine.

It sells at £6.00 inclusive from the Hampshire-based firm.

MISSION TO FIND THE GATEWAY...

TIME GATE

A four dimensional game is the manufacturer's proud boast on the cover of this latest space game for the Spectrum.

Your mission is to travel back through time to destroy the enemy before they hatch their evil plot of intergalactic tyranny.

The game displays the view from the cockpit as your ship hurtles through space past stars,



planets, galaxies and ultimately towards the Time Gate.

Once through this you can attempt to shoot the aliens who appear momentarily in front of you.

You are armed with photon torpedoes which you must fire at the aliens to destroy them.

The ship is equipped with impressive flight and battle control computers.

Short range radar enables you to train your photon torpedoes accurately on the aliens.

Long range radar shows you the number of aliens in any given galaxy and their positions.

There is also a jump drive which enables you to race through time.

The game comes complete with a keyboard overlay to simplify the playing buttons on the computer.

The ships computer records the level of damage sustained and the number of aliens downed. There is a lot to concentrate on so only experienced space pilots need apply.

Time Gate is the latest game from Quicksilver of Southampton. It runs on a Sinclair Spectrum in 48K and costs £6.95.

IMPROVING YOUR TUNNEL VISION...

3D TUNNEL

3D Tunnel is the latest offering from 3D expert Malcolm Evans, the man behind 3D Monster and 3D Defender — the J. K. Greye games that have sold more than thirty-thousand tapes between them.

The 3D effect is created by a sequence of ever decreasing squares which your craft passes through, creating the effect of depth as the squares appear to disappear into the distance on your screen.

As you pass through the tunnel a number of adversaries will attempt to stop you. You will have to deal with rats, bats, rabbits and even an express train hurtling towards you from the depths of the tunnel.

You can shoot these obstacles or try to dodge them.

3D Tunnel runs on a Sinclair Spectrum in 48K or 16K and is available from New Generation Software of Bristol at £5.95.

THIS COULD BE A REAL BOA!

SNAKES

Snakes introduces you to a wriggling maze of the colourful but deadly creatures. You are in control of a grinning blob and using this you must outwit seven menacing snakes which wriggle and twist around in the screen.

At the start of the game, the screen is filled with tiny eggs which your blob must consume

to score points. The snakes are walled in by lines of eggs but these are soon consumed by the red snake thus releasing the other snakes.

The action is now fast and furious as the snakes chase after you hungry for a nice juicy blob. When all the eggs have been consumed phase two of the game commences.

Now it is the turn of the blob to get its revenge as it can now eat the snakes. To do this it must land on a snake's tail from whence it will chomp its way along the entire length of the snake to gain 200 points.

The blob is moved using either a joystick or the keyboard.

Snakes runs on an unexpanded Vic-20 and is the latest addition to the Postern range of games. It is available from the Cheltenham-based company at £5.99.

THE ACTION PACKED PACKAGE!

GAMES PACK 2

Three games for under a fiver is this latest value-for-money package offered for the ZX81.

The games are all action packed — City Bomb places you on a bombing raid over a deserted city with the mission to destroy as much of it as possible.

3D Battle places you at the cockpit of Starblazer Cruiser hurtling through space at the speed of light. You are attacked by alien death ships which are spinning towards you intent on your destruction.

Gridball is a two player type tennis game — with both players operating their players with the keypad control keys. The cassette is available from JRS Software of Worthing at £4.95.



NEW PRODUCTS NEW PRODUCTS NEW PRODUCTS NEW GAMES NEWS

COME FLY FASTER WITH US!

ASTRO CHASE

Astro Chase adds a number of new features to the space war type game.

You are the astronaut aboard an inter-galactic spacecraft and the aliens are attacking.

But they are not just attacking from the space immediately around your planet but from throughout the entire universe.

This greater distance necessitates the simulation of greater flight distances created by the innovation of something called Single Thrust Propulsion. This enables the ship to fly fast over great distances whilst still able to manoeuvre and fire at the attackers.

Astro Chase is a recently imported game from the U.S. for the Atari 400 or 800. It is sold in this country by Gemini Electronics of Manchester at £19.95.

Also new from Gemini this month is a 3D driving game called Baja Buggies.

You are driving across the desert steering to ward the oncoming traffic.

The road weaves its way across the yellow sand as the sun blazes away in the sea blue sky. The screen also displays the speedometer.

The game requires 16K of memory and costs £19.95.

JOIN BILBO ON HIS DRAGON HUNT

THE HOBBIT

The Hobbit — J.R.R. Tolkien's masterpiece of imagination and lyrical prose has been converted to the computer.

Your mission is to seek out the evil Dragon and return the treasure he hoards back home.

As a secondary concern, you must look after Thorin the Dwarf and protect him. Should he be killed during the adventure, it is most unlikely you will be able to



survive the dangers ahead of you.

You will meet many of your favourite characters from the book including Gandalf, Thorin, Gollum, the Elves, and many others. Each of these characters has the ability to make decisions, interact, and communicate not only with the player but also with the other characters.

The program is part graphic part Adventure game.

The Hobbit runs on a Sinclair Spectrum in 48K. It comes complete with a full colour instruction manual and a copy of the book, *The Hobbit*.

The package is available at £14.95 from Melbourne House publishers of Leighton Buzzard.

WHAT A LOAD OF RUBBISH!

TRASHMAN

Trashman is the latest variation on the Pacman theme featuring giant flies, garbage and you as the unfortunate dustman with the job of clearing up all the mess.

You are a trash collector scouring the city streets to pick up the various garbage which is represented on the screen as a series of dots.

There are a number of added dangers for your dustman to be aware of. A super-breed of giant flies have sprung up feeding on the debris. These flies have grown to man eating proportions and are beginning to change their diet to include the local population as well as the garbage.

To fight the flies the council have invested in a fleet of remote control garbage collectors in the hope of removing the flies diet of garbage.

There are also six green trash cans placed around the city streets. If you pick up one of these the flies are temporarily weakened and you can run them over with your trash truck. But you will have to be quick as the flies are not weakened for long.

Occasionally a bit of bonus rubbish appears at the centre of the screen for which you can earn bonus points if you manage to pick it up.

Trashman is the new cartridge game from Audiogenic for the Vic-20. It is available at £19.95 from the Reading based firm or from any Vic dealer.



DR. DEATH MEETS MR BOND

SHAKEN NOT STIRRED

Secret agent 007 comes to the screen of your computer.

The game kicks off in true Bond style with an action packed scene in which a jet carrying a nuclear missile is stolen by the baddies. Your mission is to locate the missile and neutralise it.

The game introduces the evil Doctor Death who is holding the world to ransom.

The missile is hidden in a three dimensional maze in Doctor Death's under water lair.

The maze is patrolled by Paws who is Doctor Death's top henchman.

With sheer luck or Bond — like professionalism you may reach the missile control room. All you have to do now is crack the secret code.

Shaken but not Stirred runs on Sinclair Spectrum in 48K and costs £6.50 from Richard Shepherd Software of Maidenhead.

MISSION TO DESTROY THE DEATH STAR

SPACE WAR

There is a strong flavour of Star Wars in this latest game for the new Dragon computer.

You are at the controls of the sole-surviving star fighter on a mission to penetrate the Death Star defences and destroy it.

Enemy fighters are circling the Death Star and may blast you with their torpedoes at any time.

It is not only enemy fighters you have to worry about. There is also a black hole with a strong gravitational pull.

The space around the Death Star is littered with invisible space mines which can only be detected by listening carefully for a sonic alert which they will emit before they explode.

Space War is available from Microdeal of Bodmin, Cornwall, at £8.00.

SOFTWARE FOR ALL

SOFTWARE FOR ALL presents programs for the people! Our list of original programs for the BBC, DRAGON, and SPECTRUM is growing every day! Reasonably priced. Ingenious use of programming. Excellent entertainment. These are the hallmarks of SOFTWARE FOR ALL.

Order now for fast delivery or visit one of our dealers. There's big things happening for all computer users... That's why we're called SOFTWARE FOR ALL!

BBC MICRO **GALACTIC INTRUDER**

Fast arcade-type action game with Hi-Res colour and sound. Machine Code. 32K

£6.95

J.R.

Two player game. Features include exploration, drilling, employment and Price Wars. 32K

£6.95

PAIRS

A computerised version of the original card game with Hi-Res graphics.

£6.45

DRAGON 32

POLAR BEAR

Educational game for 12-year-olds. Many simple maths tables.

32K

£7.45

BBC MICRO

ROW OF FOUR

Try to outwit your computer opponent in this game of skill. Great graphics. BASIC and machine code. 32K

£6.45

BBC MICRO

AREA RADAR CONTROLLER

You're in the control tower at Heathrow and it's your job to control up to 79 aircraft, taking off, landing, or just passing through. VERY ADDICTIVE — HIGHLY FRUSTRATING!

£7.95

DRAGON 32

SPACE KINGDOM

Battle your way around the Planets to become ruler of the Galaxy! Excellent use of graphics and sound. 32K

£7.95

BBC MICRO

TIME TRAVELLER

Travel through over 100 rooms in different times, and find the key back to your own time. 32K

£6.95

BBC MICRO

PHARAOH'S TOMB

3D Maze Game and Adventure rolled into one! 48K

£6.95

ZX SPECTRUM

CAR WARS/ALIEN PLANET

Two addictive graphics games both BASIC and Machine Code.

32K

£6.95

BBC MICRO

DANGER ISLAND

An adventure game in which you fight your way through many obstacles to escape.

£6.95

DRAGON 32

Utility Pack 1

Envelope program, variable print-text scanner and memory dump. 32K

£7.45

BBC MICRO

ZOMBIE ISLAND

Fight for survival on an island inhabited by hungry, dangerous cannibals. BASIC and machine code program.

32K

£7.95

BBC MICRO

Utility Pack 2

Disassembler, program crunch and text editor. 32K

£7.45

BBC MICRO

BEBTREK

Real time advanced Star Trek Game. Extra facilities include "probe satellites", "damage reports" & "on-board computer".

16/32K

£7.95

BBC MICRO

SEND TODAY! Post to SOFTWARE FOR ALL, Dept CV, 72 North Street, Romford, Essex or Phone: (0708) 60725

Name:

Address:

Please send me:

£
£
£
£
£
£

Please bill my Access/Barclaycard/Amex No:

Please add £1.00 P&P per order. £ 1.00

Total:

I enclose Cheque/P.O. made payable to SOFTWARE FOR ALL.

**SOFTWARE
FOR ALL**

"Programs for the people"

NEW PRODUCTS NEW PRODUCTS NEW PRODUCT GAMES NEWS

METAL MEN OUT FOR YOUR BLOOD!

ROBOT

Robot is the blood sport of the future. You are the human prey in this cruel entertainment.

You are pursued around an arena by a killer robot. If the robot catches up with you you are viciously done to death by being jumped on by three tons of mechanical gladiator.

The robot is also armed with a plasma gun which will not kill you outright with the first shot but weakens and slows you down. If you suffer more than a few shots it's all over.

In order to avoid a messy death you must reach the robot's remote control box situated in the bottom right hand corner of the arena and switch it off.

If you manage to do this you can open the door of the arena and stride out a free man.

Just to make things a little more interesting for the spectators and a little more dangerous for you the arena is covered with several hidden mines which will blow you or the robot to bits if you put a foot in the wrong place.

Robot runs on a BBC Model B and is available from Bourne-mouth based Viking Software at £4.95.

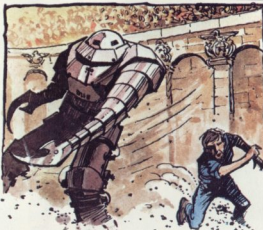
Also new from Viking this month for the BBC Model B is an action space game called Spaceflight, a breakout type game called Break-Up and a two player game called Skwosh which will run on a Model A. The games cost £3.95.

PROWLING THE MEAN STREETS...

DEADLINE

Deadline is the latest crime solving mystery game to be imported from the U.S.

The package comes as a complete dossier of a crime committed on the 7th July 1982 when the wealthy industrialist Marshall



Robner died of an overdose of Ebullion — an anti-depression drug he had been taking for some time. But was it suicide or was it murder?

That's for you to work out and you have only twelve hours to do it.

You get a brown folder containing all the documentary evidence. This includes the Coroners report, a large black and white photograph of the scene of death with a white chalk line showing the position and outline of where the body had been found, a letter from Mr Marshall's Attorneys, the Inspectors casebook complete with excerpts from an interview with Mrs Robner, some fingerprints and an official memo, a lab report, and even samples of the tablets which were the cause of death.

Deadline became the number one best selling Apple game when it was released in the States in July.

The game is available in this country from Lancashire based Pete and Pam Computers. It runs on an Apple II and costs £39.25.

FAMOUS FIVE BREAK OUT FOR BBC

GALAXIANS

Five new arcade favourites have recently been launched by a new software house manufacturing exclusively for the BBC Model B.

A Galaxians cassette is on offer featuring four types of Galaxian swooping down individually or in groups of two or three.

The game features six skill levels, with a hi-score recorder which ranks in numerical order the various high scores of the session.

Bonus bases are awarded for higher scores although the game gets increasingly difficult — just as in the arcade game.

Space Fighter is a hybrid combining some of the best features of the arcade classics Scramble and Defender.

A souped-up version of Space Invaders is offered with a few extra features thrown in to add interest. The flying saucers for example drop powerful bombs which wreak untold havoc on your laser bases.

Centipede is also offered featuring many features of the arcade version — mushrooms, snails, flies, spiders, and the centipede itself.

The games all run on the BBC Model B and cost £6.50 each or £5.50 each when you order two or more cassettes.

They are available from new Leeds-based firm, Superior Software.

HOT TIME IN THE OLD TOWN TONIGHT!

FIREBIRD

A firebird is flying across the city setting fire to buildings and terrorising a defenceless populace.

You play the part of a fireman trying to extinguish the flames and rescue the inhabitants of blazing tenements.

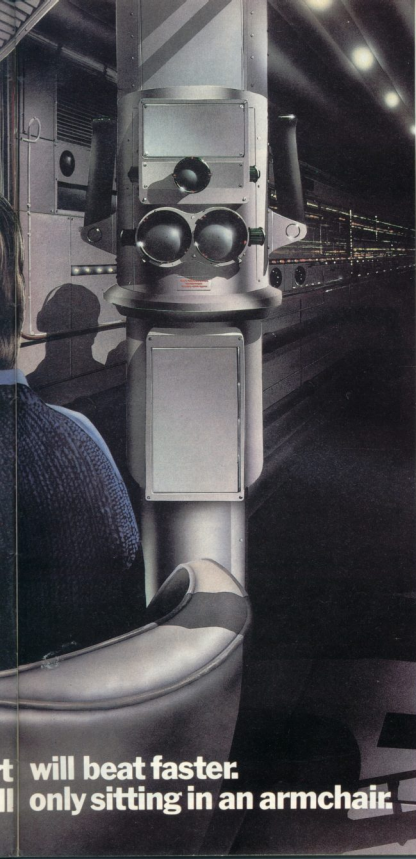
In order to rescue the unfortunate victims of the bird from another world you have to climb a ladder to where the trapped people are screaming for help.

The game comes on cartridge for the Atari 400 and 800 and retails at £29.95. It is available from Manchester-based Gemini Electronics.





**Your hands will sweat. Your heart
Your oxygen might run out. And you're still**



At seventy fathoms the only light comes from your Sonar, steadily tracking the advancing enemy fleet.

Suddenly they're above, dropping depth charges. You could dive. But how close is the sea bed? You could attack. But how many torpedoes are left? And your oxygen. Isn't it dangerously low?



'Submarine Commander' is one of 21 challenging new home computer games from THORN EMI, for use with Atari 400/800 or Commodore VIC 20. Like our 'Jumbo Jet Pilot' it's more a real-life simulator than a game.

But our programs aren't all work and no play. 'River Rescue', 'Kickback' and 'Soccer' are all-action games. 'Pool' and 'Darts' will suit armchair sportsmen.

And whilst budding Beethovens play the 'VIC Music Composer', would-be Chancellors can work on their budgets with 'Home Financial Management'. We also have educational puzzles for children that will puzzle adults at higher skill levels.

But there's one simple idea behind all our titles. They're designed for players who expect more of a challenge from a video game than creatures from outer-space can provide. Now, are you sitting comfortably?



The world's greatest TV games.



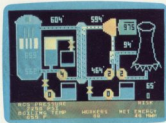
PROGRAMS FOR ATARI 400/800 (Trademark of Atari Inc., except where indicated). PROGRAMS FOR COMMODORE VIC 20 (Trademark of Commodore International).

Available from all branches of Laskys (Nationwide), Micro C at Currys, and all other leading Computer software outlets.

It will beat faster.
I'll only sitting in an armchair.



Music Composer



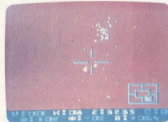
Scram



Graph-It



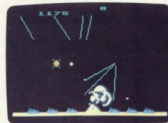
Intro to BASIC 1



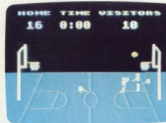
Star Raiders



European Countries



Missile Command



Basketball

3.7 million reasons why the Atari Home Computer is something to see. The display screen used with our computers is composed of 192 horizontal lines, each containing 320 dots. Delivering colour and luminosity instructions to each dot for a second requires 3.7 million cycles...a lot of work for the normal 6502 processor.

That's why the Atari computer has equipped its 6502 with its own electronic assistant. It's called ANTIC, and it handles all the display work, leaving the 6502 free to handle the rest. What this means to you is uncompromisingly spectacular display capabilities without loss of computer power needed to carry out the demands of your program.

That's a quality you just don't find in ordinary home computers. And it's one of the reasons some computer experts say that Atari computers are so far ahead of their time.

There's more...which is what you'd expect from Atari Language. The Atari Home Computer uses several programming languages to give the user maximum control of its extraordinary capabilities. PILOT, Microsoft BASIC and Atari BASIC are understood and spoken by the Atari computer. You'll also find our Assembler Editor cartridge indispensable for machine language programming.

Sound. An Atari computer has four sound generators, or voices, activated by a separate microchip. This leaves the principal microprocessor chips free to perform other tasks. And you can take full advantage of this capability which is designed for easy programming.

Change. Atari Home Computers have been designed to make change and expansion easy. The Atari computer has a modular operating system that can be easily replaced as new technology develops. If you need it, memory expansion requires no more than inserting additional RAM modules.* And the Atari ROM cartridge system also makes it easy to change languages. In short, your Atari computer won't become obsolete by future developments...because it already incorporates the future.

Sharing. To learn more about the amazing capabilities of Atari Home Computers, either visit your local dealer or fill in the coupon below.

THE GRAPHIC DIFFERENCE BETWEEN ATARI® COMPUTERS AND ALL THE OTHERS.

*Atari 800™ computer only.



Please send me FREE a brochure, price list and the address of my nearest stockist.

Name _____

Address _____

CVG5

Atari International (UK) Inc.
Windsor Hse., 185-195 Ealing
Road, Alpertown, Wembley,
Middlesex.

ATARI®
A Warner Communications Company

MAL FUNCTION T. HITCH SNAG JMR SCREAMING FOUL UP

THE BIGS

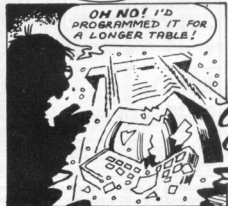
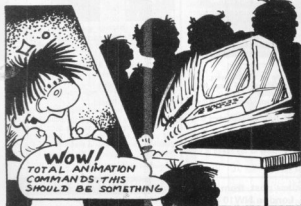
HE'S GOT G.R.O.P.E THAT REVOLUTIONARY NEW PROGRAMMING LANGUAGE. THE WHOLE COMPUTER CLUB HAVE COME ROUND TO SEE IT DEMONSTRATED.

IS YOUR MICRO PLUGGED INTO G.R.O.P.E.?
 Graphic Realtime Organic Programming Expressions is a brand new future time language where you actually start work on the program over three months before you receive your computer.

It includes: Total Animation Effect — why stop at the screen? Quad Sound • Complete range of farmyard impressions • 78 user definable invaders with 3 separate antennae movements • Real galaxian blood infused into each pixel • Alien speech synthesiser • Up to 55 high, low and new year resolutions.

SEND NOW! ONLY £300!

IT'S LOADED. CAN'T YOU FEEL THE POWER THROBBING THIS OLD MACHINES CIRCUITS.



VIC-20

16k
Adventure

STAR WARP II

A fast-action real-time space adventure — choose a ship to suit your style and explore Space for the Confederacy. Face dozens of Alien ships and in hundreds of planetary systems. With Hyperspace, Star Bases. . . . A real test of skill!! £8

THE LAIR

Explore the 700+ caverns of The Lair seeking the fabled Treasure. But be careful — the caves are inhabited with Orcs, Sprites, Balrogs and . . . little blue men! £8

Soft Toys 2 — Games for 6.5k

This is what they thought at COMMODORE: Casino — 'A new idea . . . Excellent graphics.' Simon — 'A new use of music that can be enjoyed by the entire family.' Lunar Lander — 'Excellent graphics', Maths Maze — 'For ages 3 to 93.' Hangman — 'One of the better Hangman games.' £8

* SPECIAL OFFER! *

FREE arcade game on cassette (worth £5) when you order two or more Soft Toys cassettes before 31.1.83.

Write or phone NOW for a catalogue.

All prices include P&P 1st class. Send cheque/PO to:

soft toys

14, Lockharton Avenue, Edinburgh
EH14 1AZ. Tel: 031 443 2005

BEFORE
YOU BUY A
CHESS COMPUTER

buy



Chess Computer News

CHESS COMPUTER NEWS is a full 32-page report on the leading chess computers, with the latest test results, full lists of the different features of each machine, the recommended best buys for different needs, and lowest prices. Current issue 95p (plus 25p P&P by return post)

TO GET YOUR CHESS COMPUTER NEWS FAST

* Call in and pick up your copy — and see the computers at the same time — at our London showroom, COMPETENCE, The Chess Computer Specialists, 263A Eversholt Street, London NW1 1BA (one minute south of Mornington Crescent tube station) Mon-Fri 10am-5pm, Sat 10am-3pm.

* Or we'll get your copy to you by return post if you telephone us your Access or Barclaycard number on 01-380 0666, or mail your cheque or PO with the form below.

For any information about chess computers you can call us on 01-380 0666. Only Competence offers you 21 days to thoroughly judge the machine for yourself at home. If you return the machine within 21 days, Competence will refund you the full purchase price.

And remember, we can also get your computer to you by return post with our special Competence Mail Order Service. Cut out this ad for future reference, and to show to interested friends.

NAME: _____ Ref: CVGC

ADDRESS: _____

DATE: _____

I enclose cheque/PO for ☐ £1.20 (current issue). OR please debit my Access / Barclaycard number: _____

MICHAEL ORWIN'S ZX81 CASSETTES

The best software (by various authors) at low prices

QUOTES

"Michael Orwin's £5 Cassette Two is very good value. It contains 10 stolid well designed games which work, offer plenty of variety and choice, and are fun."

from the ZX Software review
in Your Computer, May '82 issue.

"I had your Invaders-React cassette . . . I was delighted with this first cassette."

P. Rubythorn, London NW10

"I have been intending to write to you for some days to say how much I enjoy the games on 'Cassette One' which you supplied me with earlier this month."

E. H. London SW4

" . . . I previously bought your Cassette One and consider it to be good value for money!"

Richard Ross-Langley,
Managing Director,
Mine of Information Ltd.

CASSETTE 1

(eleven 1k programs)

machine code:
React, Invaders, Phantom aliens, Maze of death,
Planet Lander, Bouncing letters, Bug splat.

Basic:

ICling, Mastermind, Robots, Basic Hangman.
PLUS Large screen versions of Invaders and
Maze of Death, ready for when you get 16k.

Cassette 1 costs £3.80

CASSETTE 2

Ten games in Basic for 16k ZX81

Cassette Two contains Reversi, Awari, Laser Bases, Word Mastermind, Rectangles, Crash, Roulette, Pontoon, Penny Shoot and Gun Command.

Cassette 2 costs £5.

CASSETTE 3

8 programs for 16k ZX81

STARSHIP TROJAN



Repair your Starship before disaster strikes. Hazards include asphyxiation, radiation, escaped biological specimens and plunging into a Supernova.

STARTREK This version of the well known space adventure game features variable Klingon mobility, and graphic photo torpedo tracking.

PRINCESS OF KRAAL

An adventure game.

BATTLE Strategy game for 1 to 4 players.

KALABRIASZ World's silliest card game, full of pointless complicated rules.

CUBE Rubik Cube simulator, with lots of functions including 'Backstep'.

SECRET MESSAGES This message coding program is very hard to crack!

MARTIAN CRICKET A simple but addictive game (totally unlike Earth cricket) in machine code. The speed is variable, and its top speed is very fast.

Cassette 3 costs £5.

CASSETTE 4

8 games for 16k

ZX-SCRAMBLE (machine code)



Bomb and shoot your way through the fortified caves.

GUNFIGHT

(machine code)



INVADERS

(machine code)



FUNGALOID (machine code)

GALAXY INVADERS (machine code)

Fleets of swooping and diving alien craft.

SNAKEBITE (machine code)

Eat the snake before it eats you. Variable speed (very fast at top speed)

LIFE (machine code)

A ZX81 version of the well known game.

3D TIC-TAC-TOE (Basic)

Played on a 4x4x4 board, this is a game for the brain. It is very hard to beat the computer at it. 7 of the 8 games are in machine code, because this is much faster than Basic. (Some of these games were previously available from J. Steadman).

Cassette 4 costs £5.

Recorded on quality cassettes, sent by first class post, from:

Michael Orwin, 26 Brownlow Rd., Willesden, London NW10 9QL (mail order only please)

SPECTRUM SOFTWARE WANTED

CHESS



GOING BY THE BOOK . . .

I have described Ken Thompson's invention BELLE in previous articles. It (or she?) is a special-purpose machine built solely for playing chess, and won the third world Computer Chess Championship held at Linz two years ago with a score of 4½/5.

The development speed of BELLE is as impressive as its subsequent results. The initial design was in February 1980 at which point its components (1,700 chips) were ordered. BELLE's first move was made in July 1980 and only two months later it won the world championship!

The machine generates a candidate move in just over one two-millionth of a second and can examine 160,000 positions per second.

The opening "book" comprises 300,000 positions (compared with an estimated 200,000 positions in each volume of the *Encyclopaedia of Chess Openings*). The entire book is scanned in one and a half seconds.

BELLE's official rating is now around 2150, but improving its performance further is prohibitively difficult.

It is remarkable that the philosophy behind BELLE (fast and extensive searching of variations) is the exact opposite to that adopted by Mikhail Botvinnik, who as well as being a computer chess researcher for many years was three times world (human) champion.

His conference talk (see panel) on "Decision making and computers" stressed the importance of examining only a small number of positions at each turn — preferably only one — and to restrict the analysis for each move to approximately 50-60 — well chosen — positions in all.

Only by this means, in Botvinnik's view, can master play be achieved. Botvinnik's program "Pioneer" has been a long time in development but may well be a major advance when it appears. Sadly it seems that there is virtually no other USSR

As well as a hobby and a game, computer chess has long served as a vehicle for serious research in computer science, especially the branch known as *artificial intelligence* which is largely concerned with the methods by which people solve problems requiring complex reasoning.

There has even been a series of academic conferences on the subject and the papers from the most recent one are soon to appear in book form under the title *Advances in Computer Chess*, 3 to be published by Pergamon Press and edited, as before, by Michael Clarke, a researcher at Queen Mary College, London.

The conference itself was held last Easter at Imperial College, London and attracted delegates from nine countries as well as speakers from no fewer than seven.

The first two conference talks were by Ivan Bratko, a Yugoslavian, and Don Beal from Queen Mary College who have been independently investigating the question "why are valuations of positions based on deep analysis more reliable than 'static' ones made without any analysis?"

This seems obvious (and if it were not so, most chess playing programs are carrying out a vast amount of calculation for nothing), but it is tantalisingly difficult to answer precisely. At last, an explanation (or, at least, a partial one) has been found and is given in the book.

Other theoretical papers at the conference dealt with different aspects of searching trees of variations, forms of automatic learning, long-range positional planning, measuring the "information" contained in a chess position, and psychological experiments on both people and machines.

Two of the most interesting papers at the conference were presented by Ken Thomson, of Bell Laboratories, and Mikhail Botvinnik who was making a rare visit to Britain from the USSR.

work on computer chess in progress at present.

The Kaissa program which won the world championship in 1974 has not been developed much since.

Although some of the conference papers are far from simple for the uninitiated to understand, *Advances in Computer Chess*, 3 and the two earlier volumes, published by Edinburgh University Press, are the best available works for the serious student of the topic.

The next conference is due in 1984. Will computers have reached master level by then?

To conclude, here is a game played on the evening of the conference between Danny Kopec — a U.S. Master and former Scottish champion — and BCP, a good example of a well-developed and relatively strong program.

Danny Kopec was playing BCP and an early version of BELLE — 30 times slower than the current one — simultaneously.

BCP (White) versus D. Kopec (Black)

1. P-K4, P-K3; 2. P-Q4, P-QB4;
The "Franco-Sicilian" defence. Black's strategic aim is "to confuse White" and he succeeds. BCP is now out of the book.
3. N-KB3, P×P; 4. Q×P
An attempt at originality.
- 4.... N-QB3; 5. Q-Q3, B-B4; 6. N-B3, N-B3; 7. B-KB4, Q-N3; 8. N-Q1, P-Q4; 9. P×P, N×P; 10. B-K3, N×B; 11. P×N, B-Q2. Black is now well ahead on development.
12. B-K2, N-N5; 13. Q-B3? 0-0; (Fig 1.) White is lost, Black threatens 14. . . . N×QRP immediately. White's Queen Bishop Pawn is vulnerable and a Knight move to Q4 is also dangerous.
14. N-K5, B-R5; 15. B-Q3.
White's only possible counterplay is 15. N-QB4.
- 15.... N-Q4;
Overlooking 15. . . . N×QBch.
16. Q-B4, Q-R4ch; 17. P-B3, QR-B1;
18. Q-R4, P-B4;
A typical computer game. White is totally lost but keeps finding counterplay
19. N-B4, Q-B2; 20. P-QN3, B-K1; 21. P-R4, N×KP;
22. N(B4)×N, B×N; 23. N×B, Q×BPch; 24. K-K2, Q-N7ch;
25. N-B2? R×Nch; 26. B×R, Q×Bch; 27. K-KB1, B-B3;
28. Q-N5, P-KB5; 29. R-K1, P-B5
and Don Beal resigned for his program.



Fig 1. a b c d e f g h

BY MAX BRAMER

TV GAMES CENTRES TV GAMES CENTRES TV GAMES VIDEO SCREEN

E.T. MEETS THE F.B.I.

All I want to do is get home. That's poor old ET's lament in the latest Steven Spielberg blockbuster in which the friendly alien from outer space does his best to get back to his family and friends.

Trouble is every time ET tries to do just that those 'Earthing Aliens' conspire to stop him.

The man from the FBI tries to lock him up for the protection of the good citizens of the US.

The scientist wants to get him back to his laboratory to carry out all sorts of gruesome experiments.

ET soon finds that the only person he can trust on the inhospitable planet Earth is schoolboy Eliot.

Now you can become ET's friend and help him get home in this latest game from Atari for the VCS.

The idea of the game is to find the three pieces of ET's inter-planetary telephone and then call up his ship to come and rescue him.

Whilst conducting your search, manoeuvring ET around the screen using the joystick, you can also pick up pieces of candy which appear periodically in the centre of the screen.

As well as earning you extra points these pieces of candy are also vital in helping you locate the third section of the telephone.

The game is controlled by nine power zone symbols which are constantly changing and on

ET

which you must keep a sharp eye as they dictate what you can and cannot do at any given stage in the game.

The game has three difficulty levels. The simplest of these features just ET and his little friend Eliot searching for the various bits of the telephone.

Game two introduces the government agent who is trying to arrest ET and chases him.

For really skilled players level three introduces another baddie to deal with in the shape of a scientist who will haul ET back to his laboratory.

ET will be in the shops before Christmas to coincide with the film going on general release. It costs £29.95.

SECRETS OF SYSTEM X

The long awaited successor to Atari's successful VCS machine is about to be released in the US.

The 5200 will be in the shops in the U.S. this Christmas at around the £150 mark Dubbed System X when prototypes were shown to journalists the machine has 48K of computer memory enabling it to produce "state of the art" graphics.

The aim was to produce video games to be played on a domestic TV set of the same high quality as the coin operated games of the arcades, and according to out sources, the first wave of games, which includes Pacman and Centipede, do have the fine graphic detail one associates with the pay-per-play devices.

Before Atari owners start rushing out to the shops to enquire about this new machine there are two drawbacks that must be mentioned first. Most importantly Atari have so far said nothing about a UK launch date for the 5200. Indeed an Atari spokesman told C&VG: "We don't want to talk about that yet".

Secondly the present range of Atari VCS games will not be compatible with the new system. It has been rumoured in the U.S. that an adaptor which would enable VCS games to be played on the 5200 is also to be produced



WHO'S NOT A PRETTY BOY THEN!

SPACE VULTURES

Space Vultures are a vicious breed of birdlike aliens who can fly through space without the aid of any space ship. They will attack any old planet that takes their fancy on their strange intergalactic migration.

Nobody seems to know where they are going, or for what purpose, but then it does not really matter to you — the lone pilot of the sole remaining planetary Defender Ship.

Your duty is clear. Shoot down the aliens before they shoot you and colonise your planet for their evil bird-like overlords.

The vultures attack in groups of three, hovering around the screen and then homing in on your space ship.

You are armed with an energy shield which will protect you for a few seconds, enabling you to survive a head-on collision with the aliens and shrug off their laser fire.

If you survive the first wave of Vultures you are then challenged by the super birds who are several times the size of their predecessors and who attack in waves of three.

These superior adversaries take more than one direct hit to finish off. They swoop down straight towards your ship bombarding you with missiles. You will need to shoot fast and accurately to down them before they down you.

One drawback that Defender Ship pilots very quickly have to come to terms with is the slowness of the ship's missiles. They jerk very awkwardly skywards.

Despite this the Vultures are still pretty easy to deal with. This particular Defender Ship pilot managed to shoot down wave after wave of them on his second go.

Space Vultures is the latest game for the new Namimex HMG 2650. The game is available from Namimex stockists at approximately £20.



ATARI 5200

but this has so far not been confirmed.

If there is some uncertainty about when Atari will launch their new machine in the U.K. there is no doubt about the debut of another exciting video games system from America — the Colecovision.

The graphics are not only more detailed than conventional systems but they are also capable of producing more on-screen movement, greatly enhancing the playability of the popular space-battle genre of video games.

Coleco have insured the system against obsolescence in the fast moving video games market by making it capable of being up dated with a planned programme of add-ons. The first of these add ons will be an adaptor which will enable any existing cartridge produced for the VCS to be played on the Colecovision.

The machine will be launched with an exciting range of games. Arcade smash hits like Donkey Kong (with the manic gorilla, and captured starlet), Zaxxon and Gorf have both been converted.

The Colecovision is expected to be in the shops by next April but no news on price yet.

CENTRES TV GAMES CENTRES TV GAMES CENTRES VIDEO SCREEN

BRIGHT NEW YEAR FOR VIDEO FANS

Every other TV commercial these days seems to be advertising either video games centres or extra cartridges to go with them.

One spin off from this hotting up of competition is that prices in the high street shops are beginning to fall.

The Interton VC400 can now be snapped up for less than £50 which includes a free Space Invaders cartridge. The price of additional cartridges for this machine are also down in price.

It is as well to issue a word of warning about this machine however. Hanimex have recently introduced a new machine to replace the Interton — the HMG 2650. There will therefore be no new games for the Interton once current supplies have sold out.

DOWN THE CORRIDOR OF DANGER

You are a secret agent on a mission to infiltrate a top secret fortress.

Armed with a powerful laser gun you can shoot the mechanical guards of the fortress who are chasing you. You can also duck down by pulling back the joystick to crouch beneath the guards' lasers.

The screen shows five corridors, one on top of the other, with six connecting lifts.

The idea of the game is to get your little man to the highest corridor and then safely back down again.

Precision timing is needed to judge just the right split second

GAMES CENTRES

Not that only machines which are being phased out are falling in price. Phillips have recently announced that they will be chopping £30 off the price of their G7000 to help them compete with Atari in the Christmas shopping spree. New price £70.

Mattel is tight lipped on the subject of price cuts to their Intellivision machine which is now selling for £159. It is unlikely that they will be able to maintain this price for too much longer. Many of the dealers have already felt it necessary to top £20 off this price. Even at £139 the machine is competing not only with other TV games-centres but with half a dozen micro-

computers many with superior graphics and a wider and cheaper range of games available.

Even Atari, who currently head the field with sales of their VCS, will find it difficult to resist a price cut in the new year as the prices of micro computers looks set to tumble.

The price of cartridges too is likely to come down more in line with prices in the U.S. where games cartridges are roughly a third of the price they sell for in the U.K.

So although it is not an option open to Father Christmas the wise buyer may do better by saving his money until the Spring.

INFILTRATE

to jump on one of the lifts which pump up and down automatically like pistons in a steam engine.

Once on a lift you have to watch carefully for the positions of the mechanical guards as a blast of laser fire is their usual greeting to anything unexpected emerging from a different floor level.

Infiltate can be played by one or two players and is the latest addition to the Apollo range of games for the Atari VCS.

Also new from Apollo for the pre-Christmas shopping rush is a

nail-biting traffic control game called Final Approach.

This is your chance to suffer the tension in a simulation of one of the world's most high pressured jobs.

Planes are taking off and landing at an international airport. It is your job to see that the incoming traffic gets down safely without colliding with countless outgoing flights. Sounds easy? Just you give it a try. And remember many of the world's most serious air disasters have been traced back to air traffic control blunders and that the average air traffic controller retires with an ulcer before the age of 40!

Also new this month on the Apollo label is a slightly less serious game called Wabbit.

You are an honest hard-working farmer trying to protect your crops from a family of thieving rabbits who live in a series of burrows in your carrot field.

Every time their big ears pop up from one of the holes you throw one of your rotten eggs at them in an attempt to sink them out of their honeycombed hide out.

The Apollo range of games are imported into this country from the US by Vulcan Electronics of London. They are currently in the shops at £24.95.



Illustrations: Terry Rogers

MACHINE	NAME	MANUFACTURER
1 Intellivision	Dungeons and Dragons	Mattel
2 Intellivision	Sub Hunt	Atari
3 Atari	Defender	Mattel
4 Intellivision	Night Stalker	Activision
5 Atari	Starmaster	Mattel
6 Intellivision	Lock 'n' Chase	Atari
7 Atari	Berzerk	Atari
8 Atari	PacMan	Mattel
9 Intellivision	Utopia	Parker
10 Atari	Frogger	

The above top ten represents the sales of cartridges during the month of October.

The dominance of Atari games as being due to a backlog of delayed releases in that month. People bought a number of Mattel titles they had been waiting for some time.

The retailers are expecting the November chart to show a completely changed picture. Watch out for next month's top ten. Will your favourite be in the charts?

PENGO IS REALLY COOL!

It is possible to judge your addiction to an arcade game by how far you will travel to play it. For one more game of Pengo I would willingly travel to the Antarctic wastes in which it is set.

Four lucky members of the C&VG team have so far tried out this cutest of coin-operated video games and their verdict is unanimous . . . Pengo is the C&VG tip for 1983.

First read-on and then go and pester your local arcade owner to get hold of a Pengo machine.

PENGO

That is the essence of the game, Pengo must wipe out each swarm of sno-bees before they can run him to ground.

Each screenful of sno-bees consists of some which become instantly active and others disguised as ice blocks. These can be pecked to death by Pengo before they "wake up".

Unlike the Pacman ghosts, sno-bees are somewhat haphazard in their pursuit although one will occasionally give dogged chase to Pengo.

But while not unduly aggressive, these cute little villains can usually spot a waiting penguin a mile off and will try to approach on the wrong side of the ice block, thus robbing Pengo of his ammunition.

They are helped in this by their ability to chisel through the ice-blocks and Pengo shares this ability when he needs to get out of a tight corner.

There is a lot more to this game, like making the sno-bees dizzy and scoring big bonuses by squashing two with one block or using the indestructible blocks.

Pengo is a game apart, with



wonderful graphics, delightful characterisation, plenty of scope to work out your own tactics and a catchy melody.

But if there's one over-riding reason why Pengo will take off, it's down to that feeling of satisfaction you get when an ice-block picks up speed and knocks all the wind out of a surprised sno-bee!

THE SUICIDAL STOCKBROKER

WALL STREET CRASH

The great Wall Street crash is happening all over again.

As fire chief it's your job to catch the suicidal stock brokers as they try to end it all in one final desperate leap.

Once safely pouched in a safety blanket the danger is not over as they must be bounced into a waiting ambulance. A good player will manage it in two bounces, a beginner may well see his stockbroker bouncing off screen or just straight up again.

And the Dow Jones Index is falling all the time. Each broker who reaches an ambulance helps light up the bank and six will enable you to move onto the next stage of the game.

This is a long maze where money bags have been hidden. These must be collected and deposited in a safe. Tanks chase you through the maze.

The action continues in these modes alternately with more tanks and more brokers being added. By the time you reach three suicidal stock marketeers, a helicopter has appeared and it is possible to achieve a bonus by shooting a saved broker skywards into it.

BURGERS HAVE YOU IN A PICKLE

Burger time is the fast food game to keep a budding chef on his toes.

Picture the scene: the eggs, sausages and pickles are revolting in the kitchens.

You take the part of a chef, whose only hope is to trap your edible enemies in the burgers you are busy making.

A series of burger bridges are constructed among the platforms and ladders which make up your kitchen. Every time you run across a burger, piece of bun, cheese, tomato or lettuce, it drops closer to the dish the complete burger should end up on.

As you run across the piece of cheese, for example, it drops down a level, sending whatever lay below it, down too. Gradually a complete burger is built up, but a good player will add eggs, sausages and pickles to that burger by catching these items of food between layers.

BURGER TIME

This is done by running across a piece of burger when closely followed by an enemy.

When things get too hot for you, a quick sprinkle of pepper from your pot will stop the enemy.

French fries and ice-cream cones will add to the pepper you have left in your container.



ON THE ROAD TO RUIN ON THE MOON

MOON PATROL

The moon's surface is an inhospitable place, pitted with craters and also boasting an atmosphere heaving with aliens.

In Moon Patrol a moon buggy is your responsibility as it traverses a lunar landscape across the screen.

You are armed with a fire button and a jump stick to overcome most of the hazards that come your way.

The aliens hovering above your craft are the main source of danger in this game.

By pushing your fire button you can launch a missile skywards to try and bring them down.

But take care to avoid the bombs they are dropping moonwards to bring about your destruction.

Their bombs may also leave dangerous pits in the moon surface and these have to be noted and duly jumped.

The alien attackers take on three forms, there are obstacles across the surface which have to be blown up. Land mines, erupting volcanoes and low-flying planes add to the tension.

If you survive the beginners' course there is a champion course waiting to challenge you.

Moon Patrol is a simple game with easy to tackle controls and an obvious game objective, but it is not among the best of the recent batch.



SOMETHING NASTY IN THE GARDEN

DIG-DUG TIPS

The Dig-Dug score clock turns over at 999,999 but that needn't be the limit for a dedicated player.

Although this score seems beyond belief to a beginner, it is really just a matter of knowing the short cuts.

Beginners tunnel their way up to a monster (either a fire-breathing Fygur or a less dangerous Pooka), fire their pump gun, pump the creature to death and then move onto the next victim.

Using this technique it is possible to clear round after round but it has several disadvantages: it stops being effective at the higher rounds; it is very time consuming; it generates far less points as the fruit is not always recovered.

A better technique is to find your way beneath a rock, wait for some monsters, squash them, tunnel through to the next rock, squash some more, grab the fruit And then finish off the monsters.

Try and reach the rock before the ringing noise sounds as this releases the monsters.

Should monsters block you off from the next rock there is a technique for killing them.

After dropping the first rock tunnel yourself close to the main tunnel but not actually breaking through into it. Two millimetres is enough to use your pump on passing monsters who cannot

get your man. Always approach the tunnel horizontally as more points accrue from monsters tackled this way. When only two monsters remain move to the next rock, use it, thus making the fruit appear; grab it and finish off the final monster.

Fygars killed horizontally are worth double points and another way to bump up the points is to pump monsters in the lower areas of the screen.

It is divided into four horizontal layers. Points scored for a monster depend on which area he is finished off in. For example, a Pooka is worth 500 points if he is killed in the bottom layer.

When pumping a monster, push towards them as this will inflate them faster.

A tip for rock tunnelling is to leave a notch below the horizontal entrance to the vertical tunnel. This notch will ensure that no monsters escape.

Nuneaton Dig-Dug champion, Tooba Zaidi, who compiled these tips for us, offers some other information for top players: most rounds that can be displayed are 99; if you squash all eight monsters a 15,000 point bonus is achieved and after the 32nd round any successful pattern you devise will work for the next 50 rounds at least.

THE VIDEO WIZARDS

The latest casualty of improving arcade scores is Atari's Centipede. Three players have now come forward to reach 999,999 and I gather that it is possible to go well over the clock on this machine — and so it seems time to close this file down.

Only one contender for turning



Grab your bicycle clips and head for your nearest arcade — Bally's BMX is heading your way! This latest pinball from the American giant is based on the new cycling craze, bicycle motocross.

BMX continues Bally's return to the table that requires quite a lot of skill to master it. BMX features two levels and colour-coded targets — like the recently released Spectrum. There's also a mysterious magnetic device on the top level.

A novel feature of this novel machine are the devices which save a ball which finds its way down the chute. There's a two additional buttons alongside those which control the flippers and these work two "shields" which catch the lost ball and send it back into play — but you can only use them just so often!

the clock over at Dig-Dug though, Tooba Zaidi, who wrote the tips is our highest scorer here. Tooba also claims top spot on the Tempest machine. Still awaiting scores on: Space Dungeon and Robotron.

Illustrations: Terry Rogers



TEMPEST	QIX
945,481	263,820
Tooba Zaidi	Sarabjit Singh
SCRAMBLE	CRUSH ROLLER
912,160	471,530
Andrew Winup	Alan Dowler
GORF	AMIDAR
886,430	74,330
Gary Miller	R. J. Arundale
FROGGER	HYPERBALL
116,150	1,448,060
Richard George	Nick Strakings
DIG-DUG	PHOENIX
999,990	409,630
Tooba Zaidi	John Danvers
DONKEY-KONG	PACMAN
428,300	1,059,900
John Bull	Tim Haywood

Perhaps it's just the rhythmic "plink" of the sonar bouncing off the enemy hull, or maybe that tomblike silence which adds to the tension between depth charge blasts but submarine films always have that much more atmosphere than any other war movies.

Sub Hunter lets you partake in the thrill of an under-

water naval battle . . . but luckily for the claustrophobic, your role is acted out above the Briny.

The submarines may be running silent and deep but your mission is to seek them out and blow 'em up.

Your helicopter hovers above the waves, while the enemy uses them to dodge

and hide from your bombs.

The submarines are not alone though.

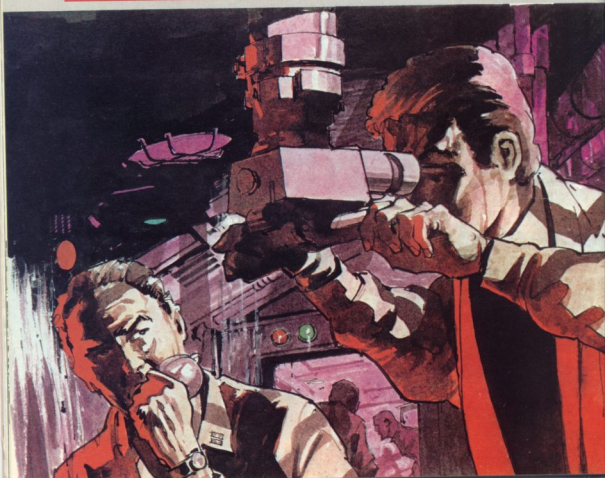
A fleet of destroyers is on hand to give covering fire and try to blast you out of the sky.

Points are scored for successful bombing of destroyers and for the destruction of the enemy subs.

RUNS ON AN ATARI 400 IN 16K

SUBMARINE HUNTER

BY HUGH DENHOLM




```

10 GOTO 8800
2098 REM **JOYSTICK CONTROL **
2099 REM ** FOR HELICOPTER **
2100 S=STICK(0)
2102 GOSUB 6000
2103 GOSUB 7000
2104 IF STRIG(0)=0 THEN 5000
2105 IF S=15 THEN 2100
2110 T=0:D=0
2120 T=(S=5)+(S=7)+(S=6)-(S=10)-(S=11)-(S=9)
2130 D=(S=5)+(S=9)+(S=13)-(S=6)-(S=14)-(S=10)
2140 IF T=0 THEN 2170
2142 IF T=1 THEN 2150
2145 GOTO 2160
2150 X=X+4:POKE 53251,X:IF X>=250 THEN X=250
2155 GOTO 2170
2160 X=X-3:POKE 53251,X:IF X<8 THEN X=8
2170 IF D=0 THEN 2100
2172 IF D=1 THEN 2179
2175 GOTO 2199
2179 IF Y=40 THEN 2100
2180 FOR I=7 TO 0 STEP -1:POKE PMBASE+896+Y+I,PEEK(PMBASE+895+Y+I):NEXT I
2190 Y=Y+1
2195 GOTO 2100
2199 IF Y=4 THEN 2100
2200 FOR I=0 TO 7:POKE PMBASE+895+Y+I,PEEK(PMBASE+896+Y+I):NEXT I
2210 Y=Y-1
2220 GOTO 2100
4999 REM **HELICOPTER MISSILE CONTROL**
5000 R=Y+5:SS=X+3:POKE PMBASE+384+R,192:POKE 53255,SS
5005 MSL=MSL-1:GOSUB 7800
5010 R=R+1:M=PEEK(53251)
5015 GOSUB 6000:GOSUB 7000
5020 IF R>=95 OR SS<5 OR SS>226 OR M=2 OR M=3 OR PEEK(53279)=3 THEN GOSUB 7600:G
OTO 2105
5030 POKE PMBASE+383+R,0:POKE PMBASE+384+R,192:SOUND 3,50+(Y+R)/2,10,8
5040 IF STICK(0)=7 THEN SS=SS+1:POKE 53255,SS
5050 IF STICK(0)=11 THEN SS=SS-1:POKE 53255,SS
5060 POKE 53255,SS
5070 GOTO 5010
5999 REM **SUBMARINE CONTROL**
6000 E=E+1
6010 J=PEEK(53259):IF E<1 THEN E=0
6020 IF E>185 THEN GOTO 6100
6030 POKE 53249,E:IF J=10 THEN HITS=HITS+1:GOSUB 7600:GOTO 6060
6040 K=K+1:IF K>=20-MSL THEN POKE 623,2:FOR A=1 TO 10:NEXT A:POKE 623,4:K=0
6050 RETURN
6060 FOR A=250 TO 100 STEP -1:SOUND 0,200,8,A/17:NEXT A:SOUND 0,0,0,0:E=0
6070 GOSUB 7800
6080 RETURN
6100 POKE 623,2:FOR A=1 TO 50:POKE 705,14:SOUND 2,50,10,8:SOUND 0,75,10,8:NEXT A
6110 SOUND 2,0,0,0:SOUND 0,0,0,0:POKE 705,88:E=0:HOME=HOME+1:GOSUB 7800:RETURN
6999 REM **DESTROYER MOVEMENT**
7000 IF J=12 THEN M=2:DST=DST+1:GOSUB 7350:GOSUB 7600:GOTO 7030
7010 Q=Q-1:IF Q=0 THEN Q=180
7012 COLOR 0:XX=INT(RND(0)*130):PLOT XX,59:COLOR 3:XX=INT(RND(0)*130):PLOT XX,59
7015 GOTO 7200
7020 POKE 53250,Q:RETURN
7030 FOR R=71 TO 75
7040 SOUND 0,220,12,6:FOR A=5 TO 0 STEP -1:POKE PMBASE+768+R+A,PEEK(PMBASE+767+R
+A):NEXT A
7050 FOR CT=1 TO 50:NEXT CT
7060 NEXT R
7070 Q=180:POKE 53250,Q:SOUND 0,0,0,0
7080 FOR R=75 TO 71 STEP -1
7090 FOR A=0 TO 6:POKE PMBASE+767+R+A,PEEK(PMBASE+768+R+A):NEXT A
7100 NEXT R
7105 GOSUB 7800
7110 RETURN
7199 REM **DESTROYER MISSILES**
7200 IF FIRE=1 THEN 7240

```

STOP HERE!

ATARI FOR ATARI GAMES ATARI

AT SPECIAL PRICES

Apple Panic	D/C	24/16K	19.95	Picnic Paranoia	D/C	32/16K	22.95
Choplifter	D	48K	22.95	Claim Jumper	D/C	32K	22.95
Track Attack	D	32K	18.95	Fort Apocalypse	D/C	32K	22.95
Dauids Midnite Magic	D	48K	22.95	Reptilian	D/C	32K	22.95
Serpentine	D	48K	18.95	Zork I, II & III	D	32K	26.50
Star Blazer	D	32K	20.95	Deadline	D	32K	32.95
Deadly Secrets	D	48K	22.95	Starcross	D	32K	26.50
Stella Shuttle	D/C	32/16K	19.95	Abuse	D	40K	12.95
Genetic Drift	D/C	32/16K	19.95	S.A.M. Voice Synth.	D	16K	38.95
Labyrinth	D/C	32/16K	19.95	Micropainter	K	48K	22.95
Sea Fox	D	48K	19.95	Sands of Egypt	D	16K	26.95
Wizard of Wor	D	32K	22.95	O'Reilleys Mine	D/C	16K	22.95
Deluxe Space Invaders	D	16K	22.95	Rosen Brigade	D/C	16K	22.95
Gorf	D	16K	22.95	Fathoms 40	D	48K	22.95
Astro chase	D/C	24/16K	19.95	Canyon Climber	D/C	16K	19.95
Cosmic Squeeze	D/C	24/16K	19.95	Frogger	D/C	32/16K	22.50
Plattermania	ROM	8K	27.95	Bandits	D	48K	22.50
Monster Maze	ROM	8K	27.95	Twerps	D	48K	22.50
Star Warrior	D/C	32K	26.95	Wayout	D	48K	22.50
Sentinel 1	D/C	24/16K	19.95	Beanie Bopper	ROM		22.50
Guardians of the Gorn	D/C	24/16K	19.95	Deadly Duck	ROM		22.50
K-Razy Antics	ROM	8K	27.50	Tigers in the Snow	D/C	48/32K	27.50
K-Star Patrol	ROM	8K	27.50	Cosmic Balance	D	48K	27.50
K-Razy Kritters	ROM	8K	27.50	Sea Dragon	D/C	24/16K	22.50
K-Razy Antics	ROM	8K	27.50	Stratos	D/C	24/16K	22.50
Firebird	ROM	8K	27.50	Space Challenge	D/C	24/16K	19.95
Embargo	ROM	8K	27.50	King Arthur's Hair	D	32K	19.50
Baja Buggies	D/C	24/16K	19.95	32K RAM board 400/800 machines			59.50
Crypts of the Undead	D	32K	19.50	Fast Chip	ROM		27.95
Escape from Vulcans Isle	D	32K	19.50	Atari 400 keyboard (in-home)			79.95
Protector II	D/C	32K	22.95				

To: **SOFT-DEAL**

48 BROADWAY GROVE,
ST. JOHNS, WORCESTER WE2 5EY

SOFT DEAL

Please send me the following items:

- 1
- 2
- 3
- 4
- 5
- 6

Despatch to:

Name

Address

I enclose my cheque for £..... Add 60p post/packing for each item

Please debit my Access card no.....



```

7210 IF Q>150 OR Q<40 THEN 7020
7220 GO=ROUND(0)*100:IF GO>95 THEN FIRE=1:GOTO 7240
7230 GOTO 7020
7240 IF START=1 THEN 7260
7250 START=1:U=Q:V=68
7260 POKE PMBASE+384+V,0
7270 IF X>U THEN U=U+ROUND(0)
7280 IF X<U THEN U=U-1-(U-X)/80
7290 V=V-1:IF V+10<Y OR V=0 OR U=0 OR U=255 THEN GOSUB 7350
7300 HIT=PEEK(53258):IF HIT>0 THEN GOSUB 7350:GOSUB 7500
7305 IF START=0 THEN GOTO 7020
7307 SOUND 3,V,10,7
7310 POKE PMBASE+384+V,48:POKE 53254,U
7320 GOTO 7020
7349 REM **DESTROYER MISSILE END**
7350 FIRE=0:START=0:POKE 53254,0:POKE PMBASE+384+V,0:SOUND 3,0,0,0
7355 POKE 77,0
7360 GOTO 7020
7499 REM **CLEAR HELICOPTER**
7500 GOSUB 7600:M=3
7505 FOR A=1 TO 50:POKE 707,0:POKE 707,14:SOUND 0,200,8,15:NEXT A
7510 SOUND 0,0,0,0:POKE 707,54:X=45:POKE 53251,X
7520 MSL=20:HEL=HEL-1:IF HEL=0 THEN GOSUB 7350:GOSUB 7800:GOTO 8000
7530 GOSUB 7800
7599 REM **HELICOPTER MISSILE END **
7600 SOUND 3,0,0,0:POKE 53278,0:POKE 53255,0:POKE PMBASE+383+R,0:R=R+5
7620 IF MSL=0 THEN 7510
7630 RETURN
7799 REM **PRINT SCORE**
7800 POKE 752,1
7810 PTS=(HITS*250)-(HOME*50)+(DST*100)

```



SEE US AT
5th
ZX MICROFAIR
DECEMBER 1991
NEW HORTICULTURAL HALL, LONDON SW1.

AUTOMATA Ltd. (C)
65a Osborne Road
Portsmouth PO5 3LR
England



PIMANIA

THE ADVENTURE GAME THAT'S FOR REAL ! £6,000 PRIZE!

Will you be the first to locate the Golden Sundial of Pi in time and space, and be rewarded with the original? Exquisitely crafted by the winner of the De Beers Diamond International Award, from gold, diamond and the most precious of the earth's riches.

PIMANIA - where saxophones turn into hanggliders, where music meets madness and where the Pi Man rules supreme! He'll talk with you, he'll befriend you, he'll betray you, he'll even do the Hokey-Kokey! Animated cartoon graphics! Full musical score! Spectacular colour and sound effects! Includes free hit single "Pimania", with vocals by Clair Sinclive and the Pi-Men!

It could take you a week to play, it could take you a lifetime! PIMANIA, "the best evidence that computer gaming has come of age... an adventure enthusiast's dream!" (Computer & Video Games)

An investment at £10 (48K Spectrum) £8 (16K ZX81)



```

7850 ? "SUBS DESTROYED ":? HITS:? " HELICOPTERS ":? HEL
7855 ? "SUBS HOME ":? HOME:? " MISSILES ":? MSL
7860 ? "DESTROYERS SUNK ":? DST:? " POINTS ":? PTS
7870 RETURN
8000 RESTORE
8002 POKE 53277,0:POKE 53248,0:POKE 53249,0:POKE 53250,0:POKE 53251,0
8005 GRAPHICS 2+16
8010 ? #6;" ":? #6;" ":? #6;" THE END":? #6;" "
8015 FOR A=1 TO 200:NEXT A:GRAPHICS 2+16
8020 ? #6;"YOU SANK ":? #6:DST:? #6;" DESTROYERS"
8030 ? #6;"YOU BLEW UP ":? #6:HITS:? #6;" SUBMARINES"
8040 ? #6;"AND SCORED ":? #6:PTS:? #6;" POINTS"
8050 ? #6;" "
8060 IF PTS<2000 THEN 8070
8061 IF PTS<8000 THEN 8080
8062 IF PTS<15000 THEN 8090
8063 ? #6;"perfect!!! well done":GOTO 8095
8070 ? #6;"perhaps you had the joystick upside down":GOTO 8095
8080 ? #6;" not bad! try again":GOTO 8095
8090 ? #6;" very good"
8095 ? #6;"PRESS START TO PLAY AGAIN"
8100 IF PEEK(53279)<>6 THEN 8100
8110 GOTO 10
8800 GRAPHICS 2+16:POSITION 0,4:? #6;" submarine hunter":POSITION 0,6:? #6;"
BY HUGH DENHOLM"
8810 POSITION 0,10:? #6;"press start to begin"
8850 IF PEEK(53279)<>6 THEN 8850
8900 REM **ESTABLISH BACKGROUND**
8901 REM **AND PLAYERS**
8905 GRAPHICS 7
8910 COLOR 1:SETCOLOR 0,0,15:SETCOLOR 4,9,10
8920 PLOT 35,10:DRAWTO 38,10:PLOT 33,11:DRAWTO 40,11:PLOT 32,12:DRAWTO 42,12
8930 PLOT 30,13:DRAWTO 43,13:PLOT 29,14:DRAWTO 45,14:PLOT 27,15:DRAWTO 48,15
8935 PLOT 28,16:DRAWTO 47,16:PLOT 29,17:DRAWTO 45,17:PLOT 31,18:DRAWTO 44,18
8940 PLOT 33,19:DRAWTO 42,19:PLOT 34,20:DRAWTO 41,20:PLOT 36,21:DRAWTO 40,21
8945 PLOT 97,2:DRAWTO 101,2:PLOT 95,3:DRAWTO 102,3:PLOT 93,4:DRAWTO 103,4:PLOT 9
2,5:DRAWTO 104,5
8950 PLOT 91,6:DRAWTO 107,6:PLOT 90,7:DRAWTO 111,7:PLOT 90,8:DRAWTO 113,8:PLOT 8
9,9:DRAWTO 114,9
8960 PLOT 90,10:DRAWTO 115,10:PLOT 90,11:DRAWTO 115,11:PLOT 91,12:DRAWTO 114,12:
PLOT 92,13:DRAWTO 113,13
8970 PLOT 93,14:DRAWTO 112,14:PLOT 93,15:DRAWTO 111,15:PLOT 95,16:DRAWTO 109,16:
PLOT 97,17:DRAWTO 107,17
8975 PLOT 72,20:DRAWTO 75,20:PLOT 70,21:DRAWTO 76,21:PLOT 68,22:DRAWTO 78,22:PLOT
7,23:DRAWTO 79,23
8980 PLOT 68,24:DRAWTO 78,24:PLOT 69,25:DRAWTO 76,25:PLOT 71,26:DRAWTO 75,26:PLOT
7,27:DRAWTO 74,27
9010 COLOR 3:SETCOLOR 2,8,4
9020 FOR Y=60 TO 79:PLOT 0,Y:DRAWTO 159,Y:NEXT Y
9030 FOR CT=1 TO 80:XX=INT(RND(0)*160):PLOT XX,59:NEXT CT
9035 COLOR 2:SETCOLOR 1,12,10:FOR YY=58 TO 70:PLOT 130,YY:DRAWTO 159,YY:NEXT YY
9037 FOR YY=71 TO 79:PLOT 157,YY:DRAWTO 159,YY:NEXT YY:PLOT 0,79:DRAWTO 159,79
9040 YY=57:FOR XX=130 TO 159:L=RND(0)*2:YY=YY-L:PLOT XX,57:DRAWTO XX,YY:NEXT XX
9042 HEL=3:MSL=20:HITS=0:HOME=0:DST=0
9045 POKE 752,1:? ? "PLEASE WAIT WHILE I BUILD YOUR":? " HELICOPTER"
9050 POKE 623,4
9055 POKE 559,46:POKE 707,52
9060 X=47:Y=5:E=0:Q=180
9070 A=PEEK(106)-24:POKE 54279,A:PMBASE=256*A
9080 FOR B=PMBASE+384 TO PMBASE+1024:POKE B,0:NEXT B:POKE 53277,3
9090 FOR B=PMBASE+896+Y TO PMBASE+902+Y:READ A:POKE B,A:NEXT B
9100 DATA 127,8,190,251,62,36,126
9110 POKE 53251,X
9120 FOR B=PMBASE+730 TO PMBASE+734:READ A:POKE B,A:NEXT B
9130 DATA 8,8,126,127,62
9140 POKE 53257,1:POKE 705,88:POKE 53249,E
9150 FOR B=PMBASE+839 TO PMBASE+843:READ A:POKE B,A:NEXT B
9160 DATA 16,58,255,127,62
9170 POKE 53258,1:POKE 53248,Q:POKE 706,2
9175 GOSUB 7800
9180 GOTO 2100

```

Some nasty alien dam-busters are out to knock a big hole in your local dam and only you can stop them! The alien ships — code named Nibblers — can only be stopped by a well placed bomb from your fighter. If you miss the Nibbler will blast a bit out of the dam, weakening it. This is a game for one player adapted from Paul Jay's prizewinning program which won him the Com-

puter and Video Games Program of the Year competition.

The Nibbler appears on the right hand side of the screen and moves across towards the dam. To stop the Nibbler and launch your ship you hit the space bar. When you are directly above the nasty alien you press the space bar again to bomb.

If the computer has been expanded and so has extra memory you

could use the user-definable graphics cabability of the Vic to improve the game. If so then the following routine should be added at the end of the program, and line 3 changed to:

```
3 PRINT CHR$(14):
GOSUB 1000
```

```
1000 FOR I = 0 TO 1024
```

```
1010 POKE 5120 + I,
```

```
PEEK (32768 + I):
```

```
NEXT I
```

```
1020 FOR I = 0 TO 1024:
```

```
READ A
```

```
1030 IFA = 1 THEN 1070
```

```
1040 POKE 6144 + I, A:
```

```
NEXT
```

```
1050 DATA 56, 124, 230,
```

```
3, 3, 230, 124, 56
```

```
1060 DATA 24, 60, 102,
```

```
231, 166, 24, 35, 68
```

```
1070 POKE 36869, 253:
```

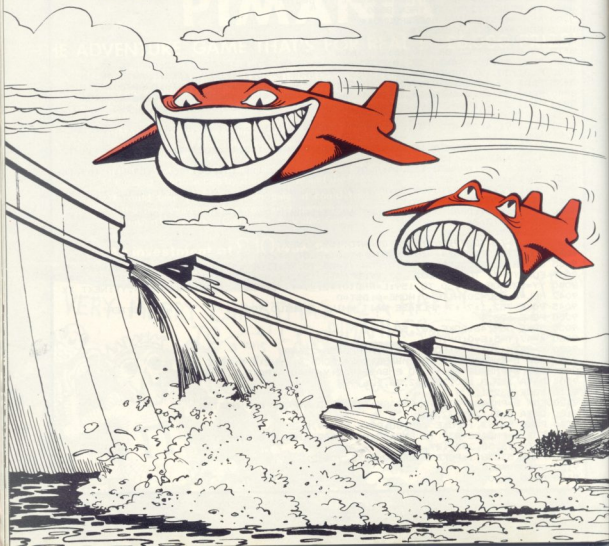
```
POKE 36866, PEEK
```

```
(36866) OR 128
```

```
1080 RETURN
```

If the above program is used then the pokes and peeks will have to be changed — 60 to 128 and 62 to 129.

NIBBLERS



```

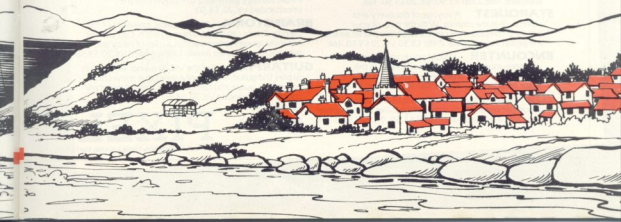
1 REMCONCAT
2 PRINT "Q":0=-32
3 PRINTCHR$(14)
4 POKE36879,237:POKE36878,15
5 FORM=7680T07701:POKEM,224:NEXT
6 FORM=7702T08164STEP22:POKEM,224:POKEM+21,224:NEXT
7 FORM=8164T08185:POKEM,224:NEXT
8 FORB=1T05
9 POKE36875,200:POKE36876,0
10 FORL=1T0500:NEXT
15 PRINT "XXXXXXXXXXXXXXXXXXXXX/":FORP=1T0200:NEXT
20 PRINT "X":FORP=1T0200:NEXT
25 PRINT "I":FORP=1T0200:NEXT
27 PRINT "I":FORP=1T0200:NEXT
30 PRINT "L":POKE36876,200:POKE36875,0:FORP=1T0200:NEXT
35 PRINT "X":FORP=1T0200:NEXT
40 PRINT "X":FORP=1T0200:NEXT
50 PRINT "X":FORP=1T0200:NEXT
65 PRINT "XXXXXXXXXXXX":FORP=1T0200:NEXT
69 NEXT
69 POKE36879,25:POKE36876,0
70 PRINT "THE OBJECT OF THE GAME"
80 PRINT "IS TO HIT THE /IBBLERS"
90 PRINT "BEFORE THEY DESTROY":PRINT
100 PRINT "THE DAM.":PRINT
110 PRINT "THE CONTROLS ARE:":PRINT
120 PRINT "SPACE TO STOP /IBBLER":PRINT:PRINT "AND LAUNCH YOUR SHIP,":PRINT
130 PRINT "AND SPACE AGAIN TO":PRINT:PRINT "DROP YOUR BOMB, F YOU "
131 PRINT "MISS YOU LOSE A POINT.":PRINT
140 PRINT "IT A KEY TO CONTINUE"
150 GETA:IF A#="" THEN 150
151 POKE36879,191
155 PRINT "Q"
156 FORM=8164T08185:POKEM,224:POKEM+30720,5:NEXT
159 REM*****
159 *****
165 V=12:POKE36878,15
170 A=0
180 FORB=7724T08164STEP22
185 POKE36877,220:FORX=1T05:NEXT:POKE36877,0
190 POKEA+B,224:POKEA+B+30720,6
200 NEXTB
210 A=A+1:IF A<2 THEN 180
220 FORA=0T01
230 FORB=7726T08167STEP22
235 POKE36877,220:FORX=1T05:NEXT:POKE36877,0
240 POKEA+B,102:POKEA+B+30720,0
250 NEXTB
260 NEXTA
261 PRINT "SCORE":S
262 T1$="000000"
263 PRINT "XXXXXXXXXXXXXXXXXXXXX-HIGH"0
264 REM*****
264 *****
270 A=INT(RND(1)*19)+1:D=7744:B$="":F=0
280 FORP=1T0A:D=D+22:NEXT
290 IF PEEK(D)>102 THEN R=0:GOTO390

```

RUNS ON AN UNEXPANDED VIC-20

ADAPTED FROM C&V's

PROGRAM OF THE YEAR



* SUPER QUALITY SOFTWARE FROM LLAMASOFT!! *

(DESIGNER — JEFF MINTER)

J = JOYSTICK CONTROL

VIC 20

ABDUCTOR

A classic new space game! ZAP the swirling alien hordes before they ram you — and about your humanoid! Survive the assault for long enough and you'll get an extra stage on your spaceship with double firepower! Awesome unexpanded VIC action.

NEW J

GRIDRUNNER

Finally, true arcade quality on the unexpanded VIC! Shoot down the segmented GHOIDS invading the grid. Beware of the pods and zappers! The awesome speed, sound and graphics gives you the best blast available for unexpanded VIC.

NEW J

ANDES ATTACK (8K, REPLACES DEFEND4)

Your spacecraft must attack the descending aliens and frustrate their evil intent. Fly your Ramjet fighter over the Andes mountain range and protect your llamas from kidnapping by hostile UFOs. Features 5 kinds of UFO, controls include up, down, reverse, fire, thrust and smart bomb. Entirely in machine code. Requires 8K expansion and joystick. £8.00 + 50p P&P.

NEW J

TRAXX M/C (8K + EXPANSION)

As seen at the Commodore show and reviewed by the Daily Telegraph. Fly your Vulcan Bomber over the enemy city and destroy the buildings. 25 levels of play, uses Hi-Res colour graphics. 8K or larger expansion needed. Only £8.00 + 50p P&P complete with instructions.

J

RATMAN! (8K EXPANSION)

Another amazing game from Llamasoft! You are the man under attack by the deadly rats as they fall from the sky. You must dodge the arrows to get to the rats and then squash them with your hammer before they dig under the platform on which you stand, and mutate into devils. Fast action with great graphics to make an extremely addictive game. 8K or larger memory expansion needed. Hi-Res colour graphics, in machine code. Only £5.00 + 50p P&P complete with instructions.

BREAKOUT-DEFLEX

Unexpanded package a full feature version of the popular arcade (breakout plus a new concept in computer games, Deflex! Both programs on one cassette only £3.95.

BLITZKRIEG

As seen at the Commodore show and reviewed by the Daily Telegraph. Fly your Vulcan Bomber over the enemy city and destroy the buildings. 25 levels of play, uses Hi-Res colour graphics and plays Rule Britannia between waves. Only £4.95 complete with instructions.

GAME GRAPHICS EDITOR

Create your very own custom characters for the unexpanded VIC 20, up to 64 characters with facilities such as reflect and save on cassette etc.

SPECTRUM

GRAPHICS CREATOR (16K)

Not just another character editor! Allows you to define not only the 21 user definable characters. Also allows you to change the entire 96 character ASCII set. Creates BYTES files ready for you to load into your own programs. Includes advanced Reflect, Invert, Field commands etc. Complete with full documentation. Bin the BIN statement and use Graphics Creator with its easy on-screen cursor editing. £3.95 + 50p P&P.

BOMBER (16K)

Yes, a full feature version of the popular game Blitz, supplied for the 16K or 48K Spectrum. For only £2.95 + 50p P&P.

ROX III (16K)

Beat the falling meteors as they invade your planet, cruise missiles are your only defence in this world of disaster. If they break through the crust of your planet then you life support systems will fail. An addictive game with fast action and great graphics. 16K or 48K Spectrum only £2.95 + 50p P&P.

SUPERDEFLEX (48K)

Bounce 'Saf', the space invader, around the screen into the power pods, keeping away of course from the devil who chases you around the screen. Steer with your Deflex shields, but beware the mines or you may be buried alive! Superb graphics and fantastic sound on the 48K Spectrum only. Only £4.95 on cassette + 50p P&P.

ATARI 400-800

TURBOFLEX

Superb ultra-fast and totally new ball game. Uses ATARI's unique features to the full. Incorporates superb colour/sound effects and uses Player/Missile graphics. Tables top 10 scores along with Score's name. £8.00 + 50p P&P.

GRAPHICS CHARACTER CREATOR

Now you can define your own custom character sets, or edit existing sets. Results are fully displayed on screen in modes 0, 1, 2. Special features include reflect, invert, save character sets etc. Supplied on cassette with data sheet only £3.00 + 50p P&P.

ZX81

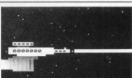
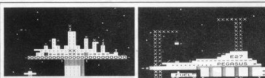
CENTPEDE (16K)

THE ORIGINAL game from the ORIGINAL author. This is the identical program to that being sold by other companies for three times the price. The game has received ecstatic reviews in the computing press. Program has 30 speed levels and ever increasing Centipede hordes. Tables top 10 scores and names. Why wait to pay more? Only £1.95 + 50p P&P.

LLAMASOFT SOFTWARE

Dept. CWS,
49 Mount Pleasant,
Telford, Shropshire
TF28 6BN.
Tel: 0756-4478
Trade enquiries
welcome.

Please add 50p P&P with all orders



And now for the big picture.

TRADER A trilogy of 16K programmes that combine to give an epic 48K graphic adventure. As a galactic trader, you deal with some very bizarre customers indeed. Will you live to tell the tale? ZX81 £10.50. VIC20 £18.50 (tape or disc).

SUBSPACE STRIKER Our top selling, big screen graphic game. With your deadly Antimat torpedoes, you unleash havoc in the Federation spacelanes and try to dive back to the safety of subspace, fast. ZX81 £5.50. VIC20 £9.50. 16K.

STARQUEST A voyage of discovery and adventure in the cosmos. With the help of your onboard computer, you seek a habitable planet amidst the perils of deep space. ZX81 £5.50. VIC20 £9.50. 16K.

ENCOUNTER Would you know what to do if you encountered extra-terrestrial beings? In this adventure, you are snatched off the Earth and the space invaders play YOU! ZX81 £5.50. VIC20 £9.50. 16K.

ZOR Battle of the robots. Fight for survival in this action-packed strategy game. Megajoules of destructive energy in a futuristic duel. ZX81 £5.50. VIC20 £9.50. 16K.

PIXEL POWER At last it is easy to create your own custom characters on the 8K plus expanded VIC20. A graphics workshop packed with useful features like Create, Amend, Save, View Set. £9.50. Refreshes the pixels that other programmes can't reach. (See Pixel Power in action in Trader and Subspace Striker)

HARVESTER Reap your reward in the Booperspace fields around the planet Delta. A cut-throat strategy game for 2 to 4 players for the unexpanded VIC20. £4.50.

BRAINSTORM The telepathic emissions of the friendly Psions can wreck a human brain. Can you get our three space explorers across a river of nasty goo without blowing their minds. Unexpanded VIC20. £4.50.

GUITARPIX 1 For the VIC20 owner who wants to play the guitar. The first of a series that shows how to tune the guitar and demonstrates some elementary chords. Unexpanded VIC20. £4.50.

Send SAE for more details.


PIXEL

Pixel Productions 39 Ripley Gdns. London SW14 8HF

```

294 IFPEEK(D-1)=224THEN$90
295 POKE36878,15:POKE36864,11:POKE36877,250:FORM=1TO40:NEXT:POKE36877,0:POKE36877,0
2
300 POKE36864,12:GOTO270
300 POKED,60:POKED+30720,0
305 IFB#="" THEN400
300 GETB:IFB#="" THEN430
400 D=D-1
405 POKE36878,15:POKE36876,140:FORM=1TO20:NEXT:POKE36876,0
410 FORM=1TO20:NEXT
420 POKED+1,32:GOTO290
424 REM*****SHIP*****
430 FORB=7702107723
440 POKEB,62:POKEB+30720,0
445 POKE36878,15:POKE36876,220:FORP=1TO5:NEXTP:POKE36876,0
450 GETC:IFC#="" THEN490
470 FORP=1TO20:NEXTP
480 POKEB,32:NEXTB
481 GOTO390
484 REM*****BOMB*****
490 L=200
491 FORC=0+22TOB+484STEP22
495 IFB<7706THEN$530
496 POKE36878,5:L=L-1:POKE36876,L
500 POKEC,46:POKEC+30720,0
505 IFPEEK(C+22)=60THEN$=S+1:GOTO550
510 R=0
512 IFPEEK(C+44)=224THENPOKE36876,0:POKEC,32:R=1:S=S-1:GOTO550
520 FORP=1TO30:NEXT:POKEC,32
530 NEXT
540 POKED,32:GOTO390
550 POKE36876,0:POKEC+22,32:POKEC,32
551 PRINT"SCORE"S
552 POKE36877,220
553 FORM=15TO0STEP-1
554 POKE36878,W
555 IFR=1THENPOKE36865,37
556 FORC=1TO30:NEXTC:IFR=1THENPOKE36865,39
557 FORC=1TO30:NEXTC,W
558 POKE36877,0:IFR=1THENPOKE36865,30
559 FORM=BT07723
570 POKED,62:POKEB+30720,0:POKE36878,15:POKE36876,220:FORM=1TO5:NEXT:POKE36876,0
571 FORM=1TO40:NEXT:POKEB,32
575 NEXT
578 IFR=1THENPOKE36865,30:GOTO290
580 GOTO270
590 FORZ=0TO1:POKED+Z,224:POKED+Z+30720,6:NEXT:PRINTCHR$(142):POKED+2,223:POKED
+30722,6
594 POKE36878,4:POKE36877,180
595 FORZ=D+24TO8169STEP22:POKEZ,224:POKEZ+30720,6:NEXT
599 FORZ=8185TO0STEP-1
600 POKEZ,224:POKEZ+30720,6
610 NEXT
620 PRINTCHR$(14):"THE DAM HAS BEEN":PRINT
630 PRINT"DESTROYED AND ITS ALL":PRINT
640 PRINT"YOUR FAULT!!!":PRINT
644 U=INT((TI+0.5)/60)
645 PRINT"DU LASTED"U"SECS":PRINT
646 PRINT"SCORED"S:PRINT:PRINT
647 IF$=0THEN$=S
650 PRINT"ANOTHER GO(Y/N)?" :PRINT"
655 POKE36877,0
660 GETB#
670 IFB#="Y"THENPRINT"Y":S=0:GOTO70
680 IFB#="N"THEN660
700 PRINT"Y"
710 PRINTCHR$(142):POKE650,0
720 END

```

```

10 REM DRAGON'S TEETH BY C. GORDON
20 GOSUB 230
30 BX=BX+(JOYSTK(0)<20 AND BX>0)-(JOYSTK(0)>40) AND BX<27:
PRINT@ 416+BX,BS;:RETURN
40 GOSUB 30
50 TP=BP+BD: IF TP>1503 THEN 120 ELSE IF PEEK(TP)=128 THEN POKE BP,
128 :POKE TP, 131: BP= TP: GOSUB 30: GOTO 40
60 GOSUB 30
70 IF PEEK(TP)=245 THEN BD=BD+2: GOTO 40
80 IF PEEK(TP)=140 THEN BD=-32+(BD=31)-(BD=33): IF SC=MX>60 THEN
MX=SC: GOSUB 330:GOTO 40 ELSE GOTO 40
90 IF PEEK(TP)=143 AND PEEK(TP)<230 THEN POKE TP,128:SC=SC
+1:PRINT@489,"":PRINT USING "####":SC::SOUND
160,1:BD=32-(ABS(BD)=31)+(ABS(BD)=33):GOTO40
100 IF PEEK(TP)=255 THEN BD=(-BD)+2*(BD<-32)-2*(BD>-32):GOTO 40
110 IF PEEK(TP)=250 THEN BD=BD-2:GOTO 40
120 SOUND 3, 10:POKE BP,128:BL=BL-1:IF BL=0 THEN 270 ELSE
PRINT@509,"":PRINT USING "":BL;
130 PRINT@416,STRINGS(32,128);
140 GOTO 180
150 CLS: CLEAR200:PRINT@0,STRINGS(32,255)::FOR I=0 TO 448 STEP 32:
PRINT@I,CHRS(245)::PRINT@I+31,CHRS(250)::NEXT I
160 GOSUB 330
170 SC=0:BL=5
180 BP=1217+RND(10):BD=33
190 PRINT@483,"SCORE":PRINT@503,"BALLS":PRINT@509,"":PRINT
USING "":BL;
200 BS=CHRS(128)+STRINGS(3,140)+CHRS(128):BX=10:PRINT@416+BX,BS;
210 GOSUB 30:IF(PEEK(65280)AND 1)=0 THEN 210
220 GOTO 40
230 CLS:PRINT@6,"DRAGON'S TEETH":?:"YOU ARE CONFRONTED BY A
HORRIBLE DRAGON AND YOU ARE ONLY EQUIPPED WITH A BAT AND FIVE
BALLS.":PRINT "YOU WILL HAVE TO KNOCK OUT MOST OF ITS TEETH TO
SURVIVE"
240 PRINT:PRINT"HIT ANY KEY TO START"
250 IF INKEYS="" THEN 250
260 GOTO150
270 CLS
280 PRINT USING"YOUR FINAL SCORE IS####":SC
290 F=0:PRINT@448,"WANT ANOTHER GAME?"
300 ZS=INKEYS:IF ZS="" THEN 300
310 IF ZS="N" AND F=0 THEN PRINT@416,"DOES
ANYONE ELSE":F=1:GOTO 300 ELSE IF ZS="N"
THEN CLS:END
320 GOTO 150
330 FOR I=65 TO 161 STEP 32:PRINT STRINGS(30,
(143+(I-1)/2)):NEXT I:RETURN
340 END

```

BY COLIN GORDON

RUNS ON A DRAGON IN 32K

DRAGONS TEETH

If you thought fighting dragons was all about knights in armour, giant broadswords and maidens in distress you've got another think coming! All you really need to vanquish one of these fire-breathing reptiles is a table-tennis bat and five tennis-balls. Yes, really! And you don't even have to be John McEnroe to do it!

You are confronted by a particularly nasty looking dragon with a set of razor sharp teeth that make jaws look like Albert Steptoe. All you have to do to survive is knock out the dragon's teeth using the bat and balls. Easy huh? This is breakout with a difference — it bites back! Only brave dentists need apply ...

sinclair
ZX Spectrum

JOYSTIX !



JOYSTIX SHOWN NOT INCLUDED

2 earth shattering
games at fantastic prices

FROG



SPACE BUGS - MACHINE CODE

Can you defend your planet from an alien invasion. The Marauding bugs are swarming in for the kill. So keep on your toes, joystick or keyboard.....£4.00

GALAXIONS - MACHINE CODE

This is the most amazing alien game ever seen on the Vic 20. Galaxions swarming in attack formation to destroy your planet. The nearest program to the real arcade game for the unexpanded Vic 20.....£3.00

FROG

An amazing version of Frogger in the unexpanded Vic 20. With diving turtles and plenty of vehicles to run you down. Fast action and high resolution graphics. Joystick or keyboard control.....£4.00

ALIEN ATTACK - MACHINE CODE

You are under attack from an immense force. This program has various ways for you to battle against going on extra terrestrial experience for any adventurous human being.....£5.00

VIC BOMBER

An extremely fast action Bomber game for the Vic 20. With high resolution colour graphics. Flatten the enemy city before its too late.....£3.00

PUCKMAN - MACHINE CODE

The old favourite back again. Joystick or keyboard control. Fast action. High resolution colour graphics in the unexpanded Vic 20.....£5.00

SPACE TRAVEL - MACHINE CODE

Zip your way through the myriad of invading aliens to survive. Keyboard or joystick controls, high resolution colour graphics.....£5.00

VIC RESCUE - MACHINE CODE

Your Planet is under attack by a fourth dimension and your only escape is by lunar pod to the mother ship. However you must first dodge your way through the Astronid belt and onto the landing pad before returning home. Keyboard or Joystick control, high resolution colour graphics.....£5.00

GOLF

Can you get a Birdie, or how's your handicap coming along? A real time 18 hole golf course puts you to the test. One or two players, choice of clubs, with score sheet. See you at the 18th.....£4.99

STAR SNAKE

A novel genre idea - manoeuvre the snake around the screen to eat the stars but watch it or you may eat yourself.....£1.99

WORDHANGER

A highly educational hangman game with vocabulary and 2 player or play against the computer option.....£5.00

SPECTRUM 16k or 48k

ATARI 400/800 16 k

URGENTLY REQUIRED

Software and hardware projects for all micro computers. If you have written a program or designed an add-on then we will pay top cash or the highest royalties. So send in a demo now to: Interceptor Micro's, Lindon House, The Green, Tadley, Hants.

FROM **INTERCEPTOR
MICRO'S**

At last, the ultimate in ZX add-ons has arrived. The unique board has been designed to take Atari* type or Commodore* type joystick. The board will take two joysticks+ which are software programmable using the in statement on your Spectrum. Just add a few simple lines to your programs for true arcade action. Supplied with full instructions and demonstration cassette for only
£18-95

**INTERCEPTOR
SOFTWARE**

VIC 20 Unexpanded

TRADE ENQUIRIES WELCOME
FOREIGN DISTRIBUTORS REQUIRED

**INTERCEPTOR
MICRO'S**

LINDON HOUSE, THE GREEN,
TADLEY, HANTS.

SEE US AT
5th
ZX MICROFAIR
DECEMBER 18th
NEW HORTICULTURAL HALL, LONDON SW1.

Mr. Mrs. Miss Address			
Quantity	Item	Item Price	Total
	Joystick board (Spectrum)	£18.95	
	Galaxions Vic 20	£7.00	
	Space Bugs Vic 20	£4.00	
	Frog Vic 20	£4.00	
	Alien Attack Vic 20	£5.00	
	Bomber Vic 20	£3.00	
	Puckman Vic 20	£5.00	
	Space travel Vic 20	£5.00	
	Vic Rescue Vic 20	£5.00	
	Golf 18k Exp Vic 20	£4.99	
	Star Snake Spectrum	£1.99	
	Wordhanger Atari	£5.00	
	Postage & packing	£0.50	
	C & Vtg Jan 81		
TOTAL:			£
Send order to: Interceptor Micro's, Lindon House, The Green, Tadley, Hants.			

*Is a registered trade mark of Atari inc. *Is a registered trade mark of Commodore Business Machines

*Is a registered trade mark of Sinclair Research Ltd.

Calisto Computers Ltd.

119 JOHN BRIGHT STREET
BIRMINGHAM

021-632 6458

ATARI 400 with Basic language **£249.95**
without Basic language **£199.95**

ATARI 800 with Basic language 16K **£399.95**

ATARI 810 Disc Drive with DOS II **£299.95**

ATARI 410 Cassette Recorder **£49.99**

ATARI 400 48K
INC Basic **£299.99**
+£10 p & p

ATARI 800 with Basic language 48K **£479.95**

UPGRADES
for ATARI 400
32K **£75.00** 48K **£99.95**

850
Interface Module
£135.00

GAMES

ASTERIODS
BASKETBALL
MISSILE COMMAND
PAC-MAN
SPACE INVADERS
SUPER BREAKOUT
CENTIPED
SUBMARINE COMMANDER
JUMBO JET PILOT
SOCCER
KICKBACK
MOUNTAIN SHOOT
DEFLECTIONS
ANGLE WORMS
LUNAR LANDER
REAR GUARD
REAR GUARD
JAW BREAKER
FROGGER
PROTECTOR
CHICKEN
DODGE RACER
KRAZY SHOOTOUT
SHOOTING GALLERY
RACE IN SPACE
GHOST HUNTER
GHOST HUNTER
ALIEN SWARM
ALIEN SWARM
HOTFOOT
GALACTIC CHASE
GALACTIC CHASE
AIR STRIKE
AIR STRIKE
SHAMUS
NAUTILUS
CLOWNS & BALLOONS
TUMBLEBUGS
THACK ATTACK
PACIFIC COAST HIGHWAY
CANYON CLIMBER
CHOPFLUT
PREPPIE
APPLE PANIC
SLIME
SHOCKER & BILLIARDS
DARTS
GHOST ENCOUNTERS
FIGUREFITS
COMPUTE A & REVERSI
OWARI & BULL & COW
EASTERN PRINCE
SPACE GAMES
BUG OFF
COMBAT
COMBAT
ELIMINATOR
ELIMINATOR
STRATOS
STRATOS
SEA DRAGON
SEA DRAGON
TUTTI FRUTTI

ROM £29.95
ROM £24.50
ROM £29.95
ROM £29.95
ROM £29.95
ROM £24.50
ROM £29.99
ROM £34.99
ROM £34.99
ROM £29.99
ROM £29.99
16K (c) £12.50
16K (c) £12.50
24K (c) £12.50
16K (c) £16.50
16K (c or d) £29.95
16K (c or d) £31.50
32K (c or d) £25.50
16K (c or d) £25.50
16K (c or d) £25.50
ROM £29.95
16K (c) £16.75
16K (c) £16.75
16K (c) £19.95
32K (c) £21.85
32K (c) £25.50
16K (c) £7.50
16K (c) £19.95
32K (c) £20.25
16K (c) £19.95
32K (c) £19.95
16K (c) or 32K (d) £25.50
32K (c or d) £25.50
16K (c or 32K (d) £21.80
16K (c) or 32K (d) £21.80
24K (c) £21.80
48K (c) £25.50
16K (c) or 32K (d) £19.95
32K (c) £21.80
24K (c) £25.50
16K (c) £19.99
16K (c) £19.99
16K (c) or 32K (d) £14.99
16K (c) £14.99
16K (c) £14.99
16K (c) £24.50
16K (c) £19.95
16K (c) £19.95
24K (c) £24.50
24K (c) £38.50
24K (c) £38.50
16K (c) £19.50
32K (c) £19.50
16K (c) £26.95
16K (c) £26.95
32K (c) £26.95
16K (c) £19.50

TUTTI FRUTTI
WAR
CHOPPER RESCUE
HELLCAT ACE
FLOYD OF THE JUNGLE
BATTLE
THE GRANITE POINT GHOST
THE DISAPPEARING DOLPHIN
STORY MACHINE
FACE MAKER
CHRISTMAS SAMPLER
ASTRO CHASE
ASTRO CHASE
SKING
TT RACER

ADVENTURE GAMES
ADVENTURELAND
PIRATE ADVENTURE
MISSION IMPOSSIBLE
VODOO CASTLE
THE COUNT
STRANGE ODYSSEY
MYSTERY FUNHOUSE
PYRAMID OF DOOM
GHOST TOWN
SAVAGE ISLAND PART I
SAVAGE ISLAND PART II
GOLDEN VOYAGE
ZORK I
ZORK II
DEADLINE
BOB AND WINTER
CAVES OF DEATH
ADVENTURE HINTS

GAMES SOFTWARE

COMPUTER CHESS
VIDEO EASEL
STAR FLUTE
STAR FLUTE
SUNDAY GOLF
GALACTIC TRADER
ACTION QUEST
MISSION ASTEROID
WIZARD & PRINCESS
ULYSSES & THE GOLDEN FLEECE
CROSSFIRE
MOUSATTACK
THRESHOLD
ACTION QUEST
ANALOG ADVENTURER
CRYPTS OF TERROR
CRYPTS OF TERROR
CRUSH CRUMBLE, CHOMP
RICOCHET
STAR WARRIOR
TEMPLE OF APOSHAI
UPPER REACHES OF APOSHAI
RESCUE AT RIGEL
INVASION ORION
DATERSTONES OF RYN
MURDER AT AWESOME HALL
TOURNAMENT & BALL POOL

32K (c) £19.50
32K (c) £19.50
32K (c) £29.50
32K (c) £29.50
32K (c) £22.50
48K (c) £36.80
48K (c) £36.80
48K (c) £19.50
48K (c) £28.60
48K (c) £24.50
32K (c) £26.50
32K (c) £26.50
16K (c) £19.95
16K (c) £19.95

24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
24K (c) £16.50
32K (c) £30.95
32K (c) £30.95
32K (c) £39.50
16K (c) £17.95
32K (c) £19.95
£ 9.95

ROM £24.50
ROM £24.50
32K (c) £16.50
40K (c) £20.25
16K (c) £12.50
32K (c) £16.50
32K (c) £16.50
40K (c) £22.25
40K (c) £29.50
40K (c) £31.95
32K (c) £23.95
32K (c) £31.50
40K (c) £31.95
16K (c) or 32K (d) £18.99
16K (c) £21.95
32K (c) £25.50
32K (c) £22.45
16K (c) £14.95
32K (c) £29.95
32K (c) £29.95
32K (c) £14.95
24K (c) £18.75
32K (c) £14.95
16K (c) £12.95
16K (c) £19.50

DARTS
CRIBBAGE & DOMINOES
BRITISH JIGSAW PUZZLES
EUROPEAN JIGSAW PUZZLES
NURSERY RHYMES I
NURSERY RHYMES II

ACCESSORIES
16K RAM (800)
16K RAM BOARD (800)
32K RAM PACK (800)
DOS 2 MASTER DISKETTE

BOOKS AND MANUALS
DE-RA ATARI
MASTER MEMORY MAP

GENERAL SOFTWARE
WORD PROCESSOR
INVITATION TO PROGRAMMING 1
INVITATION TO PROGRAMMING 3
CONVERSATIONAL FRENCH
CONVERSATIONAL GERMAN
CONVERSATIONAL ITALIAN
CONVERSATIONAL SPANISH
MINI WORD PROCESSOR
KIDS I
KIDS II
BOBS BUSINESS
GRAPHICS MACHINE
PLAYER PIANO
MICROPAINTER
GRAPHIC MASTER
S.A.M.
ABUSE
HOME FINANCIAL MANAGEMENT
MICROSOFT BASIC

TUTORIALS

DISPLAY LISTS
HORIZONTAL & VERTICAL
SCROLLING
PAGE FLIPPING
BASICS OF ANIMATION
PLAYER MISSILE GRAPHICS
SOUNDS
DISK UTILITIES

BUSINESS AND UTILITIES

CCA DATA MANAGEMENT
TEXT WIZARD
3-D SUPERGRAPHICS
K-CODES
MACRO ASSEMBLER
MACHINE LANGUAGE MONITOR
MONKEY WRENCH (800 ONLY)
MEMORY TEST
BASIC ROUTINES
BASIC ROUTINES
C.R.I.S.
DISKEY

16K (c) £19.50
16K (c) £19.50
16K (c) £19.50
16K (c) £19.50
16K (c) £19.50
16K (c) £19.50

£40.00
£65.00
£115.00
£26.95
£21.95

£18.00
£4.95

£99.95
£115.95
£22.95
£39.95
£39.95
£39.95
£39.95
32K (c) £19.95
16K (c) £19.95
16K (c) £19.95
16K (c) £19.95
48K (c) £25.50
48K (c) £25.50
32K (c) £19.20
32K (c) £19.20
32K (c) £19.20
48K (c) £14.50
16K (c) £19.99
48K (c) £59.99

16K (c) £13.95
16K (c) £13.95
16K (c) £13.95
16K (c) £13.95
32K (c) £19.95
16K (c) £13.95
32K (c) £19.95

(d) £101.00
(d) £99.95
40K (c or d) £55.95
40K (c) £51.50
40K (c) £55.50
16K (c) £29.95
(d) £39.95
ROM £51.50
16K (c) £7.95
16K (c) £19.50
24K (c) £19.50
32K (c) £171.20
32K (c) £38.50

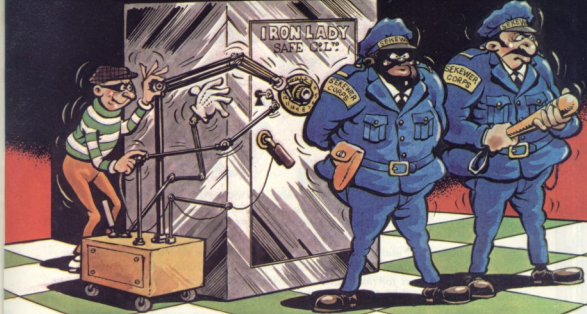
To: CALISTO COMPUTERS LTD, 119 JOHN BRIGHT STREET, BIRMINGHAM.
PLEASE ACCEPT MY ORDER FOR THE FOLLOWING PROGRAMS:-

-
-
-
-
- for £..... enclosed.

Cheque No. for £.....
Please debit my credit card ACCESS/VISA No.
Phone orders welcome on 021-632 6458. Signed

Calisto Computers Ltd.

Despatch to:
Name:
Address:
SPECIALISTS IN MICROCOMPUTERS AND SOFTWARE
119 JOHN BRIGHT STREET, BIRMINGHAM B1 1BE
Telephone: 021-632 6458



RUNS ON AN ACORN ATOM IN 3K

BY STEPHEN MAYFROID

BULLION SNATCH

Pssst! Want to get a gold record? A criminal one that is. No it's not a Bucks Fizz number, stupid! I'm talking about real gold bars. All you have to do is find your way around a maze, pick up five gold bars and deposit them in a safe. Nothing to it. Well, there could be a few minor

problems. Like the guards who roam the maze. They can be a bit nasty at times — lethal in fact. But only if you get on the wrong side of them. The safe is also guarded by two sentries. But that shouldn't put you off — just think of all that gold!

Scoring is as follows:

100 points are awarded for picking a gold bar up.

200 points are awarded for placing it in the safe.

500 bonus points + 1 extra live are awarded for picking up and depositing the five gold bars in the safe separately.

Once all the gold bars

have been removed off the screen, "A" should be pressed — a new level of skill will be prepared, and your score and number of lives will be displayed.

The controls are — 'U' to move up, 'N' to move down, 'H' to move left, 'J' to move right.

```

6 DIKZZ50;M=0;O=EB002
7 W=0;L=3;R=3;C=50;Q=35;U=0
13 Z=EB001;X=0
14 ZZZ=EB0F5;F,A=EB010;ZZA=ZZ2+A;N.
15 F,A=11T025;ZZA=EB0H2;N.;F,A=20T050;ZZA=EB0H3+A-20;N.
17 ZZO=EB1BE;H=32;ZZI=EB1DA;G=-1
18 IFB50 R=50
20 IFU=1500 U=2000
21 M=40;IFU=2000 L=L+1
22 P,#12"SCORE "W" LIVES "L
23 F,A=10T00;WAIT;N.
24 U=0
80 G,A
90 F,#13
100 F,A=1T0C;B=A,R,5510+1;B7EB000=EFF;N.
110 F,A=EB000 TO EB01E;TA=EFF;N.;F,A=EB01F TO EB1FF 5.32;
    TA=EFF;N.
111 F,A=EB1DE TO EB1FF;TA=EFF;N.
112 F,A=EB000 TO EB1DE 5.32;TA=EFF;N.
119 F,A=1T05;B=A,R,5510+1;B7EB000=115;N.
120 EB1DE=127
131 A=0
200 LINK RRO
210 T=2
215 IFZ=42 G,b
220 IF7B0=53 Z=Z-32
220 IF7B0=46 Z=Z+32
240 IFZJ0=40 Z=Z-1
250 IF7B0=42 Z=Z+1
255 IF7B0=33 AND Q=35;R=R+5;G.13
260 IFZ=42 G,b
270 IFZ=EFF OR (Z=127 AND Q=35)OR(ZEB000DRZ)EB1FF;Z=T
280 IFZ=115 G,c
285 IF Q=EA3 AND ZZ=127;Q=35;P,#7;Z=127;Z=EB1BE;U=U+200
290 T=32;ZZQ
295 IFM=0 G,z
296 IFM=1 R.
300 G,200
300EF,Y=TOR
400 A=ABSND/54+1;IFA=1 X=-32
401 IFA=2 X=32
402 IFA=3 X=-1
403 IFA=4 X=1
405 ZZY=32
406 IF (ZZY+K)=EFF OR (ZZY+K)=127;G,410
407 IF (ZZY+K)EB000 AND (ZZY+K)EB1FF ZZY=ZZY+K.
410 ZZY=42
416 M=1;GOS,200
418 N.
419 M=0;F,A=1T02
420 ZZO=32;ZZI=32;ZZO=ZZO+G;ZZI=ZZI+H
430 ZZO=42;ZZI=42
440 IF (ZZI=EB15A)OR (ZZI=EB1DA);H=H+1;G=K+1
445 N.
450 G,200
700BL=L-1;F,A=1T0B0;K=0;T=4;N.;IFL 0 G,200
710 P,#12";F,A=1T016;P,#7";"you're dead!!!!!!";N.
715 IFU=1500 U=2000
716 W=4U
720 P,1111"SCORE "W;L.
800CQ=4A3;U=U+100;G,290
1000ADM HR1,W=3,P=1;P,#21
1010 (J;RRO JSR #B71;STY #B0;RTS;)
1020 P,#6;G,90

```

Illustration: Terry Rogers



CURSE OF THE

BY DAVID HEALEY



Somewhere in the Mountains of the Moon there lies an ancient Aztec temple. Inside this crumbling ruin there is a treasure so strange, so valuable and so cunningly hidden that bounty hunters from all over the world have been lured to take up the challenge to discover it.

But so far none have managed to unearth the treasure from its ancient resting place.

They have all fallen victim to the Curse of the Aztec Tomb. There are many unmentionable dangers for the would-be treasure hunter to overcome once he steps into the musty depths of the tomb and the only clue to the treasure's hiding place is a curious

```

45 GOTO 9500
50 LET X=23
55 LET M=1
60 LET Y=32
65 LET S=0
70 LET S=1000
75 LET M1=0
80 LET U=0
90 GOSUB 3000
100 GOSUB 2000
200 PRINT AT A-1,C-1;" "
205 IF A=21 THEN GOSUB 2000
210 PRINT AT A,C;"0"
300 LET S=S-25
305 LET A=C+1
310 LET C=C+1
320 IF A=Y AND C=X THEN GOTO 93
330 PRINT AT Y,X;"+"
340 IF INKEY$="J" THEN GOSUB 30
350 IF INKEY$="0" THEN GOTO 320
500 GOTO 270
600 LET A=3
610 LET C=13
620 RETURN
6300 LET X=X-1
6400 LET S=S+100
6500 LET Y=Y-1
6600 PRINT AT Y+1,X+2;" "
6700 IF Y=2 THEN GOTO 3500
6800 RETURN
6900 PRINT AT Y,X;" "
7000 LET S=S-200
7100 LET Y=Y-2
7200 PRINT AT Y,X;"+"
7300 IF C=X-1 THEN GOTO 3240
7400 PRINT AT Y,X;" "
7500 LET Y=Y+2
7600 GOTO 240
7700 PRINT AT A-1,C-1;" "
7800 FOR Q=1 TO 5
7900 PRINT AT A,C;" "
8000 LET A=A+1
8100 LET C=C+1
8200 PRINT AT A,C;"0"
8300 NEXT Q
8400 PRINT AT A,C;" "
8500 GOTO 3236
8600 LET X=12
8700 LET Y=2
8800 LET S=S+300
8900 PRINT AT Y,X;"+"
9000 IF X=4 THEN GOTO 3560
9100 IF INKEY$="0" THEN GOSUB 40
9200 IF INKEY$="1" THEN GOTO 270

```

Illustration: Dorian Cross

```

3570 IF X=10 AND Y=2 THEN GOTO 4
3600
3580 IF X=7 AND Y=2 THEN GOTO
4200
3585 LET S=S-25
3590 IF X=5 AND Y=2 THEN GOTO
4200
3595 IF X>12 THEN LET X=12
3600 IF X=3 THEN GOTO 4400
3620 GOTO 3530
3700 PRINT AT Y,X;" "
3710 LET Y=Y-1
3720 LET S=S+100
3730 PRINT AT Y,X;"+"
3735 IF X=9 THEN GOTO 3560
3740 GOTO 3570
4000 LET Y=Y+1
4010 PRINT AT Y+1,X;" "
4020 PRINT AT Y,X;"+"
4030 LET Y=Y-1
4040 LET X=X-1
4050 PRINT AT Y+1,X+1;" "
4060 PRINT AT Y,X;"+"
4070 LET Y=Y+1
4080 LET X=X-1
4090 PRINT AT Y-1,X+1;" "
4100 LET Y=Y+1
4110 PRINT AT Y-2,X;" "
4120 PRINT AT Y,X;"+"
4130 LET S=S-75
4140 GOTO 3570
4200 FOR Z=1 TO 5
4210 PRINT AT Y,X;" "
4220 LET Y=Y+1
4230 PRINT AT Y,X;"+"
4240 NEXT Z
4250 PRINT AT Y,X;" "
4260 GOTO 9350
4400 LET S=S+300
4500 LET S=S-10
4507 IF INT (RND*10)=1 THEN GOTO
5000
4510 IF INT (RND*10)=2 THEN GOTO
45300
4520 IF INKEY$="0" THEN GOTO
5500
5000 IF U=1 THEN GOTO 4500
5010 LET U=1
5015 LET M=0
5020 PRINT AT 9,3;" ";AT 10
,3;" ";AT 11,3;" ";AT 10
,1;" ";AT 11,2;" ";AT 10
,2;" ";AT 11,2;" ";AT 10
,1;" ";AT 11,2;" ";AT 10
,1;" ";AT 11,2;" ";AT 10
,1;" ";AT 11,2;" ";AT 10
5075 PRINT AT 9,0;" ";AT 10

```



AZTEC TOMB



RUNS ON A ZX81 IN 16K

Aztec symbol — which looks strangely like a modern dollar sign. But you'll have to struggle to even find that . . .

This is an adventure game based almost entirely on graphics and you have to explore the scene presented to you on the screen. The only controls you have are the 'I' key which is the walk command and the 'O' key which can be used to make your explorer, represented by a plus sign, jump over any obstacles.

You start the game at the base of the mountain and the entrance to the tomb is on the far side. Once you are at the base of the mountain there is no turning back . . .



```

1,1;" ";AT 11,2;" "
5050 PRINT AT 10,0;" ";AT 11
1,1;" "
5055 PRINT AT 10,0;" ";
AT 11,1;" "
5060 PRINT AT 12,0;" "
5065 GOTO 4500
5300 IF U=0 THEN GOTO 4500
5310 LET U=0
5315 LET M=1
5320 PRINT AT 12,0;" "
5325 PRINT AT 10,0;" ";AT 11,1;"
5327 PRINT AT 10,0;" ";AT 11,1;"
5330 PRINT AT 9,0;" ";AT 10,1;"
5335 PRINT AT 11,2;" "
5340 PRINT AT 9,0;" ";AT 10,1;"
5345 PRINT AT 11,2;" "
5350 PRINT AT 9,1;" ";AT 10,1;"
5355 PRINT AT 9,1;" ";AT 10,1;"
5360 PRINT AT 11,2;" "
5370 PRINT AT 9,0;" ";AT 10,1;"
5375 IF M=1 AND M1=1 THEN GOTO 5
0
5380 GOTO 4500
5385 LET M1=1
5390 PRINT AT Y,X;" "
5395 LET S=S+100
5400 LET Y=Y-1
5405 PRINT AT Y,X;"+"
5410 IF M=1 THEN GOTO 5540
5415 IF INT (RND*3)=1 THEN GOTO
5420
5425 LET Y=Y-1
5430 LET X=X-1
5435 PRINT AT Y,X+1;" "
5440 PRINT AT Y,X;"+"
5445 LET Y=Y+1
5450 PRINT AT Y-1,X+1;" "
5455 PRINT AT Y,X;"+"
5460 FOR K=1 TO 6
5465 PRINT AT Y,X;" "
5470 LET Y=Y+1
5475 PRINT AT Y,X;"+"
5480 IF Y=11 AND U=1 THEN GOTO 6
5485
5490 NEXT K
5495 LET S=S-750
5500 PRINT AT 10,0;" "
5505 PRINT AT 10,0;" "
5510 FOR J=1 TO 50
5515 NEXT J
5520 IF G=1 THEN GOTO 6850
5525 CLS
5530 PRINT " GOOD GRIEF, WHO O
5535 YOU THINK"
5540 PRINT "YOU ARE, SUPERMAN. F
5545 ANCY DOING"
5550 PRINT "A SWAN DIVE OFF THE
5555 TOP OF A"
5560 PRINT "CLIFF. WHAT SOME PEO
5565 PLE WILL DO"
5570 PRINT "FOR A BIT OF AZTEC T
5575 REASURE."
5580 PRINT "YOU SCORED ";S
5585 PRINT "PRESS N/L TO RE-STAR
5590 T"
5595 IF INKEY$="" THEN GOTO 5730
5600 CLS
5605 GOTO 50
5610 IF INT (RND*3)=2 THEN GOTO
5615
5620 LET S=S-15
5625 IF X>9 THEN LET X=9
5630 IF X=4 AND INT (RND*5)=2 TH
5635 EN GOTO 7200
5640 IF X=8 THEN GOTO 7000
5645 IF INKEY$="1" THEN GOTO 630
5650
5655 IF INKEY$="0" THEN GOTO 690
5660
5665 GOTO 6050
5670 LET X=X+1
5675 PRINT AT Y,X-1;" "
5680 PRINT AT Y,X;"+"
5685 LET S=S+100
5690 GOTO 6050
5695 LET Y1=12
5700 LET X1=0
5705 PRINT AT Y1-1,X1;" "
5710
5715 PRINT AT 9,3;" "
5720 GOSUB 7300
5725 PRINT AT 10,3;" "
5730 GOSUB 7300
5735 PRINT AT 10,3;" "
5740 GOSUB 7300
5745 PRINT AT 11,3;" "
5750 GOSUB 7300
5755 PRINT AT 11,3;" "
5760 GOTO 7350
5765 REM
5770 RETURN
5775 LET S=S-300
5780 CLS
5785 PRINT " AN INTERESTING FE
5790 ATURE OF "
5795 PRINT "AZTEC ARCHITECTURE I
5800 S THE CLEVER"
5805 PRINT "LITTLE CEILINGS THAT
5810 LOWER
5815 PRINT "THEMSELVES DOWN ON T
5820 OP OF"

```




Official
BBC Software

OUT NOW— Software for your BBC Computer

Make the most of your BBC Microcomputer with this exciting new range of BBC software packs.

Featuring colour, sound, movement and superb graphics, they cover a wide range of applications — from painting, drawing and home finance to sophisticated video games. Two of the packs include programs demonstrated in *The Computer Programme* on BBC tv.

Each of these high-quality software packages contains a pre-recorded program cassette and a comprehensive handbook.

Home Finance • Early Learning
Fun Games • Games of Strategy
Painting • Drawing • Music

The Computer Programme Programs Vol. 1
The Computer Programme Programs Vol. 2

Price **£10.00** (inc. VAT) each

ON SALE
WHERE YOU
SEE THIS
SIGN



THE *REAL*
SOFTWARE FOR
YOUR BBC
COMPUTER

Published by British Broadcasting Corporation

TRS-80 SOFTWARE

DOUBLE AGENT

(3-D M/C Graphics Adventure. With sound)

£12.95

Your mission is to steal the secret plans. As a master of disguise you must choose one very carefully before entering the enemy H.Q. Don't rush, don't dawdle, for either will raise suspicion. If challenged you may be able to bluff, flee or fight. You may also be taken to the cells where your disguise will help, won't it?

BUY THE TWO PROGRAMMES

DOUBLE AGENT & EXTERMINATOR for £19.95

and get a FREE copy of **MOONBASE RESCUE** (value £5.95)
This offer Valid until 31st January, 1983

THE EXTERMINATOR

(Fast action M/C arcade style game)

£7.95

Stage 1

...Kill the birds. Your ship has 8 directions of fire. Remember they like their eggs. They have a helper . . . watch out!

Stage 2

...Now the birds have gone, it will be easy. All you do is pick them off the ground and return them to the 'Safe area' for elimination. Wait . . . what was that. Look out!! It's two robo....AGGGGGH

ALGRAY SOFTWARE

Please put me on your mailing list.

Name

Address

Town/City

Machine Memory Disks

Signed

ALGRAY

FREEPOST ALGRAY

Algray House, 33 Bradbury Street,
Barnsley, South Yorkshire.



Age Group	Percentage
18-29	80%
30-49	75%
50-64	65%
65-74	55%
75+	45%

```

9150 PRINT "
9160 PRINT "
9170 PRINT "
9180 PRINT "
9200 RETURN
9300 FOR J=1 TO 50
9301 NEXT J
9302 CLS
9303 PRINT " YOU HAVE BEEN SQU
ASHED BY A"
9305 PRINT "BOULDER. YOU'RE CERT
AINLY NOT THE
9310 PRINT "ATHLETIC TYPE ARE YO
U?"
9315 PRINT
9317 LET S=5-500
9320 PRINT "YOU SCORED ";S
9325 PRINT
9330 PRINT "PRESS N/L TO RE-STAR
T"
9335 IF INKEY$="" THEN GOTO 9335
9336 CLS
9340 GOTO 50
9350 FOR J=1 TO 50
9352 NEXT J
9353 LET S=5-500
9354 CLS
9355 PRINT " YOU HAVE DROWNED
IN THE MOUNT."
9360 PRINT "ISNT IT ABOUT TIME Y
OU LEARN TO"
9365 PRINT "TO SWIM? I SUPPOSE I
CAN TEACH YOU."
9370 PRINT "LATE THOUGH NOW."
9375 PRINT
9380 PRINT "YOU SCORED ";S
9385 PRINT
9390 PRINT "PRESS N/L TO RE-STAR
T"
9395 IF INKEY$="" THEN GOTO 9395
9400 CLS
9410 GOTO 50
9500 PRINT AT 2,4;"MOUNTAIN OF THE
AZTECS"
9510 PRINT AT 6,0;" YOU ARE FAC
ED WITH THE TASK"
9520 PRINT "OF EXPLORING A SACRE
D MOUNTAIN"
9530 PRINT "OF THE AZTECS, IN WH
ICH ONE OF"
9540 PRINT "THEIR GREAT LEADERS
IS REMOURED"
9550 PRINT "TO BE BURIED ALONG W
ITH THE MOUNT"
9560 PRINT "RICHES IN ANCIENT RE
LICS."
9570 PRINT " THE ONLY CLUE YOU
HAVE IS "
9580 PRINT "THAT YOU MUST SEEK U
P THE MOUNT"
9590 PRINT "WHICH CLOSELY RESEMB
LES A DOLLAR"
9600 PRINT "SIGN."
9610 PRINT "BEWARE OF THE CURSE.
THE MOUNT"
9620 PRINT "MANY DANGERS TO FACE
ON YOUR WAY"
9630 PRINT "TO THE TREASURE. GOO
D LUCK."
9640 PRINT " KEY 1 ALLOWS YOU
TO MOVE"
9650 PRINT "FORWARD AND KEY 0 AL
LOWS YOU TO"
9660 PRINT "JUMP. PRESS N/L TO S
TART"
9670 PRINT AT 0,0;"
9680 PRINT AT 4,0;"
9690 PRINT AT 1,0;"";AT 2,0;"
AT 3,0;"
9700 PRINT AT 1,31;"";AT 2,31;"
";AT 3,31;"
9710 IF INKEY$="" THEN GOTO 9710
9715 CLS
9720 GOTO 50
9990 SAVE "ONLY "
9990 GOTO 1

```

Meanwhile back in space ... the long and winding tunnel faces our brave astronaut trapped deep in the heart of a very unfriendly planet.

You have to steer a ship through the tunnel avoiding outcrops of rock and deadly mines. To keep the

ship flying you must navigate through fuel gates which you'll find tucked away in the tunnel.

There is a high score feature built into the program and you can alter the width of the tunnel as you get more skilful

at navigating through the tortuous twists and turns. Control keys are '4' for left and '6' for right.

So now it's all up to you — are you a space-age artful dodger?

RUNS ON A

3000 SERIES PET

IN 8K

BY NEIL STEVENSON

TUNNEL RUN

```

5 REM***** TUNNELRUN *****
6 REM*** OCT.1982 BY NEIL STEVENSON****
10 PRINT"J":FORA=32768TO32807:POKEA,160:NEXT
20 FORA=32807TO33767STEP40:POKEA,160:NEXT
30 FORA=33767TO33728STEP-1:POKEA,160:NEXT
40 FORA=33728TO32728STEP-40:POKEA,160:NEXT
50 PRINT"*****"
60 PRINT"*****"
70 PRINT"*****"
71 PRINT"*****"
72 PRINT"*****"
73 PRINT"*****"
74 PRINT"*****"
75 PRINT"*****"
76 PRINT"*****"
77 PRINT"*****"
78 GETA$:GG=VAL(A$):IFGG<30RGG>11THEN78
79 GG=GG*2
100 PRINT"J":G=33272:PRINT"*****"
:REM#25 CURSOR DOWNS*
110 H=33748:FORA=HTOH-(40*12)STEP-40:POKEA,160:NEXT
115 FORA=H+GGTOH+GG-(40*12)STEP-40:POKEA,160:NEXT
120 POKEG,32:POKEH,160:POKEH+GG,160:PRINT"POKEG,22
130 IFPEEK(G+40)<>32THEN500
140 SC=SC+1
150 IFPEEK(151)=41THENPOKEG,32:G=G+1:GOTO240
160 IFPEEK(151)=42THENPOKEG,32:G=G-1:GOTO240
170 A=INT(RND(1)*8)+1
175 IFA=1ANDH<33728THENH=H-1:GOTO120
180 IFA=1THENH=H+1:GOTO120
190 IFA=2ANDH<(33767-GG)THENH=H+1:GOTO120
200 IFA=2THENH=H-1:GOTO120
210 IFA=3THENH=H+INT(RND(1)*GG-3)+3:POKECH,81:
POKECH+1,64:POKECH+2,81:GOTO120
220 IFA=4THENPOKEH+1,160:POKEH+2,160:POKEH+3,
160:GOTO120
230 IFA=5THENPOKEH+GG-1,160:POKEH+GG-2,160:
POKEH+GG-3,160:GOTO120
231 IFA=6THENPOKEH+INT(RND(1)*GG-3)+3,90:GOTO120

```

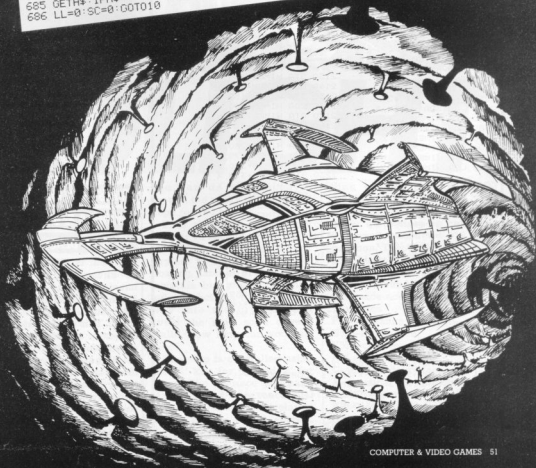
```

235 A=INT(RND(1)*2)+1:GOTO175
240 IFPEEK(G) < 32 OR PEEK(G+40) < 32 THEN 500
250 POKEG,22:GOTO170
500 IFPEEK(G)=64 OR PEEK(G+40)=64 THEN POKEG+40,32:SC=SC+10:GOTO170
510 FORA=1 TO 10:POKEG,160:FORB=1 TO 50:NEXT:POKEG,32:FORB=1 TO 50:NEXT:NEXT
520 POKEG,32:LL=LL+1:IFLL>2 THEN 540
530 GOTO100
540 PRINT "GAME OVER"
550 A$=" GAME OVER "
560 PRINT "*****";FORA=1 TO 21:PRINT MID$(A$,A,1):FORB=1 TO 100:NEXT:NEXT
570 FORA=1 TO 2000:NEXT
580 PRINT "J"
590 IF SC > HS THEN 630
600 PRINT "*****"
610 PRINT "X"
620 PRINT "X"
621 POKE158,0
625 GETA$:IFA$="" THEN 625
626 SC=0:LL=0:GOTO10
630 PRINT "*****";
640 PRINT "*****";
650 PRINT "*****";
660 PRINT "*****";
670 PRINT "*****";
680 PRINT "*****";
684 POKE158,0:HS=SC
685 GETA$:IFA$="" THEN 685
686 LL=0:SC=0:GOTO10

```

YOU SCORED "SC" POINTS!!!
 THE HIGH-SCORE IS "HS"
 PRESS ANY KEY TO CONTINUE."

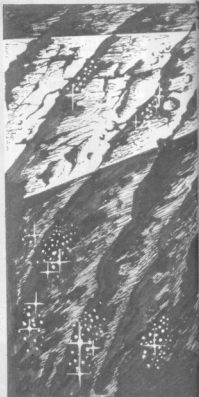
TODAY'S HIGHEST SCORE!!
 PRESS ANY KEY TO CONTINUE"



```

1 MODE7
2 FX=0
3 ENVELOPE1,1,-26,-26,-26,255,255,255,50,0,0,-50,49,0
4 ENVELOPE2,1,1,1,1,10,10,80,100,-1,0,0,100,0
10 PROCINIT
11 MODE7:YX=1:VDU23:8202:0:0:0;
15 SOUND1,1,255,255
20 PRINTTAB(0,21)"CAVE FLIGHT"
30 UP=2:DOWN=15
40 X=10:FORIX=0TO20:PRINTTAB(0,IX)CHR$(89):NEXT
45 TIME=0
46 REPEAT
47 FORIX=0TO20:PRINTTAB(39,IX)" " :NEXT
48 IFFX(40) THEN TIME=0
50 FORIX=0TOUP:PRINTTAB(39,IX)CHR$(255):NEXT
60 FORIX=DOWN TO20:PRINTTAB(39,IX)CHR$(255):NEXT
70 PRINTTAB(1,X)" "
80 A$=INKEY$(0):IF A$="A" AND X(2) THEN X=X-1
90 IF A$="Z" AND X(20) THEN X=X+1
100 JX=HIMEM+3+40*X:JX=JX
110 IF JX=255 OR TIME(1000) THEN 3000
120 IF JX=ASC(" ") THEN TIME=0:SOUND2,2,100,20
123 IF RND(10)=1 THEN PRINTTAB(37,RND(DOWN-UP)+UP)CHR$(
881+RND(6)):"*":CHR$(89)
124 YX=YX+1:IFYX=30 THEN PRINTTAB(37,RND(DOWN-UP)+UP)CH
R$(881):"*":CHR$(89):YX=YX-1
125 CALL START
127 PRINTTAB(1,X)CHR$(244):CHR$(240)
130 PRINTTAB(0,22)"TIME LEFT ":10-(TIME DIV 100):" "
140 PRINTTAB(0,23)"DIST. TRAVELLED":FX:FX=FX+1
150 UP=UP+RND(3)-2:DOWN=DOWN+RND(3)-2:IFDOWN(5) THEN DOW
N=DOWN+RND(5)
160 IF UP(15) THEN UP=UP-RND(5)
170 IF UP(1)THENUP=1
175 IF DOWN(19) THEN DOWN=19
177 IF DOWN(=UP+2) THEN DOWN=UP+4
180 UNTIL FALSE
2000 DEFPROCINIT
2010 DIM X 140
2020 FORPASS=0TO2 STEP2
2030 PX=X
2040 *OPT PASS
2050 *START LDX #2
2060 .PP LDA HIMEM,X
2070 STA HIMEM-1,X
2080 LDA HIMEM+40,X
2090 STA HIMEM+39,X
2100 LDA HIMEM+80,X
2110 STA HIMEM+79,X
2120 LDA HIMEM+120,X
2130 STA HIMEM+119,X
2140 LDA HIMEM+160,X
2150 STA HIMEM+159,X
2160 LDA HIMEM+200,X
2170 STA HIMEM+199,X
2180 LDA HIMEM+240,X
2190 STA HIMEM+239,X
2200 LDA HIMEM+280,X
2210 STA HIMEM+279,X
2220 LDA HIMEM+320,X
2230 STA HIMEM+319,X
2240 LDA HIMEM+360,X
2250 STA HIMEM+359,X
2260 LDA HIMEM+400,X
2270 STA HIMEM+399,X
2280 LDA HIMEM+440,X
2290 STA HIMEM+439,X
2300 LDA HIMEM+480,X
2310 STA HIMEM+479,X
2320 LDA HIMEM+520,X
2330 STA HIMEM+519,X
2340 LDA HIMEM+560,X
2350 STA HIMEM+559,X
2360 LDA HIMEM+600,X
2370 STA HIMEM+599,X
2380 LDA HIMEM+640,X
2390 STA HIMEM+639,X
2400 LDA HIMEM+680,X
2410 STA HIMEM+679,X
2420 LDA HIMEM+720,X
2430 STA HIMEM+719,X
2440 LDA HIMEM+760,X
2450 STA HIMEM+759,X
2460 LDA HIMEM+800,X
2465 STA HIMEM+799,X
2470 INX
2480 CPX #40
2490 BEQ P
2500 JMP PP
2510 .P RTS
2515 +
2520 NEXT PASS
2540 ENDPROC
3000 PRINTTAB(10,11)"GAME OVER"
3001 PRINTTAB(9,12)CHR$(887):"YOUR SCORE ":FX
3002 PRINTTAB(9,13)CHR$(887)"HIGH SCORE ":HX
3003 IFFX(1) THEN PRINTTAB(8,14)CHR$(887):CHR$(888):"YOU
GOT THE HIGH SCORE!":HX=FX
3005 *FX15,0
3010 FORI=1 TO 10000:NEXT:I:RUN

```



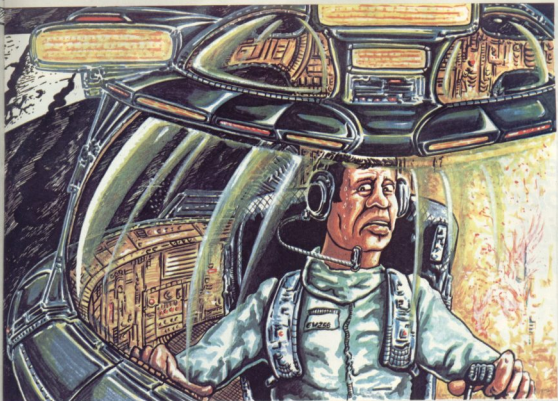
CAVE

RUNS ON A BBC

MODEL A & B IN 16K

BY S. R. BLACKBURN

The year is 2094. All reserves of energy have been exhausted and the people of the Earth have had to resort to a new source of power — Zydodium. This is an element twice as heavy as uranium and can only be found deep in the heart of Planet Io. Every year a brave space pilot is sent to Io to fly through the dangerous cave system and collect a supply of Zydodium crystals — which, strangely, float weightless in the caverns —



WE FLIGHT

before teleporting them to Earth or Mars.

This year you, as an ace pilot from the C&VG space fleet, have been chosen for the task. You have negotiated the caverns, collected the crystals and are making your way back to the surface.

Suddenly all the alarms that can go off in your ship do just that. Lights are flashing, bells ringing, and beepers beeping. The automatic navigation system cuts out, the power control system explodes in a mass of sparks, and every other system apart from life support also cuts out. Your ship is careering through the caverns at breakneck speed — and all

you can do is manoeuvre around the rocky outcrops and hope for the best!

Your ship only has enough fuel for 10 seconds more flight time. You can recharge your engines by flying through the floating patches of Zydodium crystals but you must have quick reactions to steer your way into the crystals and avoid the very solid cavern walls. How long can you survive?

The ship is controlled using the 'A' key for up and 'Z' for down. The distance you have travelled and how much fuel you have left will be displayed at the bottom of the screen. Your fuel does not start run-

ning out until your score reaches 40.

The walls of the cave will never quite close up but long diagonal passageways are common. These may seem impossible to fly through but all the caverns are navigable. A score of over 2,000 puts you in the space ace class!

Variables

F%—distance travelled.

H%—high score.

Y%—counter for position of red stars.

L—used in delay loops.

X—vertical position of ship.

DOWN—position of cave floor.

UP—position of cave ceiling.

AS—used for input of movement.

Sinclair ZX Spectrum

**16K or 48K RAM...
full-size moving-
key keyboard...
colour and sound...
high-resolution
graphics...**

**From only
£125!**

First, there was the world-beating Sinclair ZX80. The first personal computer for under £100.

Then, the ZX81. With up to 16K RAM available, and the ZX Printer. Giving more power and more flexibility. Together, they've sold over 500,000 so far, to make Sinclair world leaders in personal computing. And the ZX81 remains the ideal low-cost introduction to computing.

Now there's the ZX Spectrum! With up to 48K of RAM. A full-size moving-key keyboard. Vivid colour and sound. High-resolution graphics. And a low price that's unrivalled.

Professional power—personal computer price!

The ZX Spectrum incorporates all the proven features of the ZX81. But its new 16K BASIC ROM dramatically increases your computing power.

You have access to a range of 8 colours for foreground, background and border, together with a sound generator and high-resolution graphics.

You have the facility to support separate data files.

You have a choice of storage capacities (governed by the amount of RAM). 16K of RAM (which you can upgrade later to 48K of RAM) or a massive 48K of RAM.

Yet the price of the Spectrum 16K is an amazing £125! Even the popular 48K version costs only £175!

You may decide to begin with the 16K version. If so, you can still return it later for an upgrade. The cost? Around £60.

Ready to use today, easy to expand tomorrow

Your ZX Spectrum comes with a mains adaptor and all the necessary leads to connect to most cassette recorders and TVs (colour or black and white).

Employing Sinclair BASIC (now used in over 500,000 computers worldwide) the ZX Spectrum comes complete with two manuals which together represent a detailed course in BASIC programming. Whether you're a beginner or a competent programmer, you'll find them both of immense help. Depending on your computer experience, you'll quickly be moving into the colourful world of ZX Spectrum professional-level computing.

There's no need to stop there. The ZX Printer—available now—is fully compatible with the ZX Spectrum. And later this year there will be Microdrives for massive amounts of extra on-line storage, plus an RS232C/network interface board.



Key features of the Sinclair ZX Spectrum

- Full colour—8 colours each for foreground, background and border, plus flashing and brightness-intensity control.
- Sound—BEEP command with variable pitch and duration.
- Massive RAM—16K or 48K.
- Full-size moving-key keyboard—all keys at normal typewriter pitch, with repeat facility on each key.
- High-resolution—256 dots horizontally x 192 vertically, each individually addressable for true high-resolution graphics.
- ASCII character set—with upper- and lower-case characters.
- Teletext-compatible—user software can generate 40 characters per line or other settings.
- High speed LOAD & SAVE—16K in 100 seconds via cassette, with VERIFY & MERGE for programs and separate data files.
- Sinclair 16K extended BASIC—incorporating unique 'one-touch' keyword entry, syntax check, and report codes.

**The ZX Printer—
available now**



Designed exclusively for use with the Sinclair ZX range of computers, the printer offers ZX Spectrum owners the full ASCII character set – including lower-case characters and high-resolution graphics.

A special feature is COPY which prints out exactly what is on the whole TV screen without the need for further instructions. Printing speed is 50 characters per second, with 32 characters per line and 9 lines per vertical inch.

The ZX Printer connects to the rear of your ZX Spectrum. A roll of paper (65ft long and 4in wide) is supplied, along with full instructions. Further supplies of paper are available in packs of five rolls.



The new Microdrives, designed especially for the ZX Spectrum, are set to change the face of personal computing.

Each Microdrive is capable of holding up to 100K bytes using a single interchangeable microfloppy.

The transfer rate is 16K bytes per second, with average access time of 3.5 seconds. And you'll be able to connect up to 8 ZX Microdrives to your ZX Spectrum.

All the BASIC commands required for the Microdrives are included on the Spectrum.

A remarkable breakthrough at a remarkable price. The Microdrives are available later this year, for around £50



ZX Spectrum software on cassettes – available now

The first 21 software cassettes are now available directly from Sinclair. Produced by ICL and Psion, subjects include games, education, and business/household management. Galactic Invasion... Flight Simulation... Chess... History... Inventions... VU-CALC... VU-3D... 47 programs in all. There's something for everyone, and they all make full use of the Spectrum's colour, sound and graphics capabilities. You'll receive a detailed catalogue with your Spectrum.

**RS232/network
interface board**

This interface, available later this year, will enable you to connect your ZX Spectrum to a whole host of printers, terminals and other computers.

The potential is enormous. And the astonishingly low price of only £20 is possible only because the operating systems are already designed into the ROM.

sinclair

Sinclair Research Ltd, Stanhope Road,
Camberley, Surrey GU15 3PS.
Tel: Camberley (0276) 685311.

How to order your ZX Spectrum

BY PHONE – Access, Barclaycard or Trustcard holders can call 01-200 0200 for personal attention 24 hours a day, every day. BY FREEPOST – use the no-stamp needed coupon below. You can pay by cheque, postal order, Barclaycard,

Access or Trustcard.

EITHER WAY – please allow up to 28 days for delivery. And there's a 14-day money-back option, of course. We want you to be satisfied beyond doubt – and we have no doubt that you will be.

To: Sinclair Research, FREEPOST, Camberley, Surrey, GU15 3BR.				Order
Qty	Item	Code	Item Price £	Total £
	Sinclair ZX Spectrum – 16K RAM version	100	125.00	
	Sinclair ZX Spectrum – 48K RAM version	101	175.00	
	Sinclair ZX Printer	27	59.95	
	Printer paper (pack of 5 rolls)	16	11.95	
	Postage and packing: orders under £100	28	2.95	
	orders over £100	29	4.95	
			Total £	

Please tick if you require a VAT receipt ☐

*I enclose a cheque/postal order payable to Sinclair Research Ltd for £

*Please charge to my Access/Barclaycard/Trustcard account no.

*Please delete/complete as applicable

Signature

PLEASE PRINT

Name: Mr/Mrs/Miss

Address

CVG 901

FREEPOST – no stamp needed. Prices apply to UK only. Export prices on application.



GALAXIANS

BY CRAIG FISHER

From out of the deepest recesses of space comes a convoy of aliens bent on destruction — your destruction! Can you halt their determined advance?

This is a version of arcade Galaxians, complete with those nasty swooping craft which dive down at you from the skies. To make scoring harder in this version you can only shoot these diving aliens — and not the ones in the convoy.

Key '1' moves your laser base left, key '3' right. Use '0' to fire. The high score so far, claimed by the author, is 4100. Can you do better?

TABLE OF VARIABLES

Alien 1:-

H: Horizontal position

AS: Character(s)

ID: Direction (- 1 for left; 1 for right)

OH: Previous horizontal pos. of alien.

Alien 2:-

L: horizontal position

BS: Character(s)

IDL: Direction (see above)

OL: previous horizontal pos. of alien.

A: High score

s: Current score

Y: Horizontal pos. of convoy.

D: Direction of convoy (see above)

P: Position of laser base.

V: FOR ... NEXT loop: height of aliens.

W: Current wave No.

WS: Flags string: shows No. of wave s on screen — 51.

DI: Temporary direction variable.

GS: Convoy character string.

RUNS ON A SPECTRUM IN 16K

```

1 REM
2 REM
3 REM SPECTRUM GALAXIANS
4 REM © C.D. Fisher 8/1982
5 REM
6 REM
7 REM
8 REM
9 REM
10 BORDER 0: PAPER 0: INK 7: C
11 PRINT AT 10,10: FLASH 1;"P"
12 wait,"
13 GO SUB 1000
14 GO SUB 5000
15 RANDOMIZE
16 LET a=0
17 LET s=0
18 LET w$="" LET w$="FFFFFFFF"
19 FF$="FFFFFF"
20 LET d=1
21 LET u=2
22 LET g$="" OP OP OP OP OP OP OP
23 OP OP OP OP OP OP OP OP OP
24
25 LET p=8
26 LET v=2
27 FOR i=50 TO 2 STEP -3: IF 9
28 $(i)="" THEN NEXT i
29
30 LET h=i-19*(i>19)-19*(i>38)
31
32 LET g$(i-1 TO i+1)=""
33 IF i<4 THEN GO TO 69
34 LET id=(h<16)-(h>16)
35
36 FOR x=50 TO 2 STEP -3: IF 9
37 $(x)="" THEN NEXT x
38
39 LET l=x-19*(x>19)-19*(x>38)
40
41 LET g$(x-1 TO x+1)=""
42 LET id1=(h<16)-(h>16)
43 LET oh=h LET ol=l
44 LET b$="OH"
45 LET a$="GH"
46
47 PRINT INVERSE 1;AT 1,1;"1up"
48 TAB 15;"HIGH SCORE:";a
49
50 REM Main Loop
51
52 FOR v=3 TO 19
53 PRINT AT v-1,0h;" ";AT v-1
54
55 PRINT INVERSE 1;AT 1,5;s: I
56 NVERSE 0: INK 4;AT 0,v,g$(1 TO 21
57 );TAB y,g$(22 TO 38);TAB y,g$(39
58 TO 49)
59
60 PRINT INK 3;AT v,h;a$;AT v,
61 l;b$; INK 7;AT 20,p-2;"B"
62
63 LET u=y+d: IF y<2 OR y>10 T
64 HEN LET d=-d
65
66 IF INKEY$="0" THEN INK 2: P
67 LOT p=p+3,16: DRAW 0,130: BEEP 7
68
69 DRAW OVER 1,0,-130: INK 7
70
71 IF INKEY$="0" AND ((p=h OR
72 p=h+1) AND a$="OH") OR ((p=l OR
73 p=l+1) AND b$="GH")) THEN GO SUB
74 348
75
76 BEEP .01,-14
77
78 IF RAND.5 THEN GO SUB 800
79
80 LET p=p+2*(INKEY$="3") AND
81 p<29)-2*(INKEY$="1") AND p>2)
82
83 LET oh=h: LET ol=l
84
85 LET di=(INT (RAND*2)+1)*id
86
87 LET h=h+di
88
89 IF h>30 OR h<0 THEN LET id=
90 -id: LET h=30*(h>16) GO TO 150
91
92 LET di=(INT (RAND*2)+1)*id1
93
94 LET l=l+di
95
96 IF l>30 OR l<0 THEN LET id1
97 =-id1: LET l=30*(l>16) GO TO 15
98
99
100 LET l=(l+(l<2)-(l>30)
101
102 IF a$="" AND b$="" THEN GO
103 TO 176
104
105 PLOT INVERSE 1,0,15: DRAW I
106 NVERSE 1,25,0
107
108 PRINT AT 21,0:w$( TO w)
109
110 NEXT v
111
112 IF a$="GH" OR b$="GH" THEN
113 GO SUB 600
114
115 IF x<6 AND i<6 AND a$="" AN
116 d b$="" THEN LET m=w+1: LET s=s+
117 50: PRINT AT 1,9: FLASH 1;"BONUS"
118
119 PAUSE 20: PAUSE 0: GO TO 25
120
121 IF ABS (p-1-l)>1 AND ABS (p
122 -h)>1 THEN GO TO 40
123
124 IF ABS (p+1-l)<=1 AND b$=""

```

```

") OR (ABS (p+1-h)<=1 AND a$="")
125 THEN GO TO 40
126
127 PRINT AT 20,p: FLASH 1;"B"
128
129 PRINT AT 10,10: FLASH 1;"SC
130
131 BEEP 1,20
132
133 IF a$ THEN LET a=s
134
135 LET s=0
136
137 LET i=3
138
139 PAUSE 10: PAUSE 0
140
141 GO TO 20
142
143 REM Subroutine to Explode
144 REM Appropriate alien.
145
146 LET s=s+10
147
148 BEEP .5,35
149
150 IF p=h+1 OR p=h THEN PRINT
151 AT v,h;"00": LET a$=""
152
153 IF p=l+1 OR p=l THEN PRINT
154 AT v,h;"00": LET b$=""
155
156 RETURN
157
158 REM Subroutine to replace
159 REM aliens in pool: if
160 REM they escape.
161
162 IF a$="GH" THEN LET g$(x TO
163 x+1)=""
164
165 IF b$="GH" THEN LET g$(i TO
166 i+1)=""
167
168 RETURN
169
170 REM Subroutine to fire
171 REM aliens missiles.
172
173 LET c$="h"(INT (RAND*2)+1)
174
175 IF c$="h" AND a$="" OR c$="
176 " AND b$="" THEN RETURN
177
178 PLOT VAL c$*8+8,(21-v)*8-2
179
180 DRAW VAL c$*8+8-PEEK 23677,
181 16-PEEK 23678
182
183 INK 7
184
185 IF VAL c$=p OR VAL c$=l=p T
186 HEN GO TO 195
187
188 DRAW OVER 1,0,(19-v)*8-2
189
190 RETURN
191
192 REM Subroutine to set up
193 REM User-defined chars.
194
195 FOR x=1 TO 7: READ ps: FOR
196 7-0 TO 7: READ tr:
197
198 READ r: POKE USR p$+h,r
199
200 NEXT x: NEXT r
201
202 DATA "0",2,2,71,125,7,31,59
203
204 DATA "p",64,64,226,190,224,
205 3,226,84,64
206
207 DATA "g",49,56,31,7,125,71,
208 2
209
210 DATA "h",140,220,240,224,19
211 3,226,84,64
212
213 DATA "b",24,60,183,169,255,
214 255,219,129
215
216 DATA "q",145,82,0,3,192,0,7
217 4,145
218
219 DATA "r",128,192,224,192,12
220 8,128,126,126
221
222 RETURN
223
224 REM Subroutine to print
225 REM instructions & scores
226
227 CLS
228
229 PRINT TAB 10;"SPECTRUM GALA
230 XIANS"
231
232 PRINT "by C.Fisher,"
233
234 PRINT "The object of thi
235 s game is to"
236
237 PRINT "shoot as many of the
238 diving, firing aliens as you
239 can"
240
241 PRINT "so getting a high sc
242 ore."
243
244 PRINT "TAB 5: FLASH 1;"THE
245 CONTROLS:"
246
247 PRINT "key '1' moves you
248 left"
249
250 PRINT " '3'
251 right"
252
253 PRINT " '0' fires your
254 laser"
255
256 PRINT "PAPER 2: FLASH 1;"
257 GOOD LUCK !!"
258
259 INPUT "press 'enter' to be
260 gin)" LINE a$
261
262 RETURN

```

Here's a really explosive board game. You'll have to be really careful not to start off a chain reaction which will literally wipe you out!

It's a two player game based on a board game called Explosion — difficult to play on a board but tailor made for the TRS-80. You are presented with a 6x6 grid and each player in turn introduces one of his counters either onto an empty square or a square occupied

by one or more of his own counters. However, each square has a point at which critical mass is reached and fission occurs. Corner squares explode when two counters are on them, side squares explode when containing three counters, central squares go up when four counters occupy their space.

When an explosion occurs the counters on the exploding square are distributed

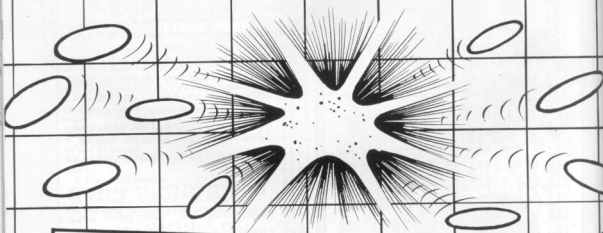
across the board. Any enemy counters on the latter square are captured and become counters belonging to the mover. Should receiving squares attain critical mass further explosions will result.

Any player having no counters left at the end of his opponent's move is the loser. The game has some interesting sound effects which can be enjoyed via the cassette port.

RUNS ON A TRS-80 IN 3K

BY PETER MILLEN

CRITICAL MASS



```

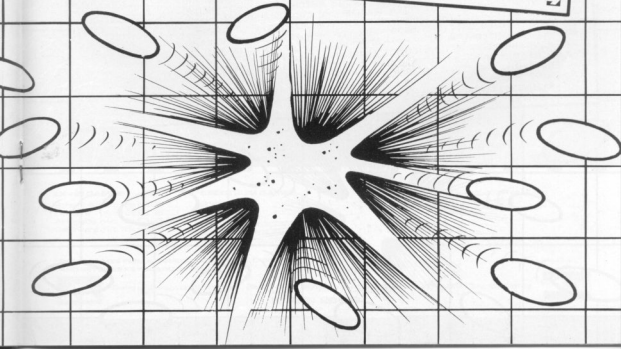
10 CLEAR200:CLS:FORLX=1TO16:PRINTTAB(LX)CHR$(23)"CRITICAL MASS":NEXTLX:GOSUBB40
15 CLS:PRINT:PRINT:PRINT:PRINTCHR$(23)"DO YOU WANT INSTRUCTIONS - Y/N?"
17 A$=INKEY$:IFA$=""THEN1ELSEIFA$="Y"THENGOSUB1000
20 DIMM(6,6),L(6,6),CA(6,6),PP(6,6):A$(0)=CHR$(183)+CHR$(187):A$(1)=CHR$(174)+C
HR$(157)
30 FORLX=1TO6
40 FORLY=1TO6
50 READCA(LX,LY)
60 NEXTLY:NEXTLX
70 FORLX=1TO6:FORLY=1TO6
80 PP(LX,LY)=193+(LX-1)*10+(LY-1)*128
90 NEXTLY:NEXTLX
95 CLS
100 FORX=15488TO15547
110 FORY=0TO768STEP128
120 POKEX+Y,140
130 NEXTY
140 NEXTX
150 FORX=0TO120STEP20
160 FORY=7TO43
170 SET(X,Y)

```

```

180 NEXTY
190 NEXTX
200 FORLX=1T05
210 PRINT@(69+(LX-1)*10),LX;:PRINT@(253+(LX-1)*128),LX;
220 NEXTLX
230 X=0:GOTO500
300 FORLX=1T05
310 PRINT@PP(TX,TY),STRING$(8,191);:FORTD=1T050:NEXTTD:XX=USR(100)
320 PRINT@PP(TX,TY),STRING$(8,128);:FORTD=1T050:NEXTTD
330 NEXTLX
340 MA(TX,TY)=MA(TX,TY)-CA(TX,TY)
350 IFMA(TX,TY)>0THENPRINT@PP(TX,TY),MA(TX,TY);:PRINT@PP(TX,TY)+4,A$(X);ELSEL(TX,TY)=0
360 EY=TY-1:IFEY=0THENGOTO370ELSEGOSUB930
370 EX=TX-1:IFEX=0THENGOTO380ELSEGOSUB940
380 EY=TY+1:IFEY=6THENGOTO390ELSEGOSUB930
390 EX=TX+1:IFEX=6THENRETURNELSEGOSUB940:RETURN
400 FB=0
410 FORTX=1T05
420 FORTY=1T05
430 IFMA(TX,TY)=>CA(TX,TY)THENFB=1:GOSUB300
440 NEXTTY
450 NEXTTX
460 GOSUB700:IFFB=1THENGOTO400ELSEGOTO500
500 X=1-X
510 PRINT@5,"PLAYER":A$(X);" WHICH COLUMN?":GOSUB960
515 PRINT@5,STRING$(24,128);:PRINT@30,"WHICH ROW?":GOSUB970:PRINT@30,STRING$(20,128);
520 IFL(TX,TY)()X+1ANDL(TX,TY)THENPRINT@5,"ILLEGAL MOVE!":FORTD=1T050:NEXTTD:GOTO510
530 MA(TX,TY)=MA(TX,TY)+1:IFL(TX,TY)=0THENL(TX,TY)=X+1
540 PRINT@PP(TX,TY),MA(TX,TY);:PRINT@PP(TX,TY)+4,A$(X);
550 IFMA(TX,TY)=>CA(TX,TY)THENGOSUB300:GOTO400ELSEGOTO500
700 VB=0
710 FORLX=1T05
720 FORLY=1T05
730 IFL(LX,LY)=(1-X)+1THENVB=1
740 NEXTLY
750 NEXTLX

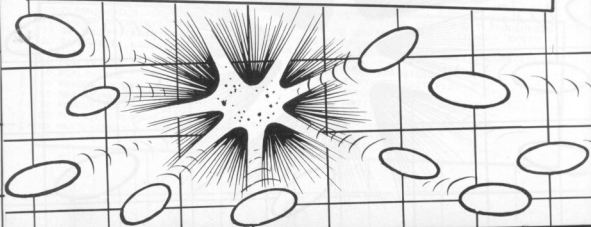
```



```

760 IFVG=1THENRETURN
770 FORLX=1TO5
780 PRINT#5,"WIN FOR PLAYER ";A$(X);":":FORTD=1TO50:NEXTTD
785 FORYY=1TO50:XX=USR(YY):NEXTYY
790 PRINT#5,"
795 NEXTLX
800 CLS
810 PRINTCHR$(23)"WANT TO PLAY AGAIN (Y/N) ?"
820 A$=INKEY$:IFA$=""THEN820
830 IFA$="Y"THENFORLX=1TO6:FORLY=1TO6:MA(LX,LY)=0:L(LX,LY)=0:NEXTLY:NEXTLX:GOTO9
5ELSEGOTO1250
835 REM ** SOUND EFFECT SUBROUTINE **
840 POKE16553,255
850 SF$=STRING$(24,191)
860 I=VARPTR(SF$):JJ=PEEK(I+2)*256+PEEK(I+1):IFJJ/32767THENJJ=-1*(65536-JJ)
870 FORPS=JJTOJJ+23:READD:POKEPS,D:NEXTPS
880 POKE16526,PEEK(I+1):POKE16527,PEEK(I+2):RETURN
890 DATA205,127,10,14,60,65,62,01,211,255,16,254,65,60,211,255,16,254,43,124,181
,32,238,201
900 DATA2,3,3,3,2,3,4,4,4,4,3,3,4,4,4,4,3
910 DATA3,4,4,4,4,3,3,4,4,4,4,3,2,3,3,3,2
920 L(TX,EY)=X+1:MA(TX,EY)=MA(TX,EY)+1:PRINT@P(TX,EY),MA(TX,EY);:PRINT@P(TX,EY
)+4,A$(X);:RETURN
940 L(EX,TY)=X+1:MA(EX,TY)=MA(EX,TY)+1:PRINT@P(EX,TY),MA(EX,TY);:PRINT@P(EX,TY
)+4,A$(X);:RETURN
960 I$=INKEY$:IFI$=""THEN960ELSEIFVAL(I$)<10RVAL(I$)6THEN960ELSETX=VAL(I$):RETU
RN
970 I$=INKEY$:IFI$=""THEN970ELSEIFVAL(I$)<10RVAL(I$)6THEN970ELSETY=VAL(I$):RETU
RN
1000 CLS:PRINTTAB(30)"CRITICAL MASS":PRINT
1010 PRINT"THIS IS A GAME FOR TWO PLAYERS ON A 6 X 6 BOARD."
1020 PRINT"IN HIS TURN, EACH PLAYER INTRODUCES ONE OF HIS"
1030 PRINT"PIECES ON TO:"
1040 PRINT"(1) AN EMPTY SPACE, OR"
1050 PRINT"(2) A SQUARE WITH ONE OR MORE OF HIS PIECES":PRINT
1060 PRINT"HOWEVER, EACH SQUARE HAS A POINT AT WHICH CRITICAL"
1070 PRINT"MASS IS REACHED AND A FISSION EXPLOSION OCCURS"
1080 PRINT"CORNER SQUARES EXPLODE WHEN CONTAINING 2 PIECES,"
1090 PRINT"SIDE SQUARES EXPLODE WHEN CONTAINING 3 PIECES,"
1100 PRINT"CENTRAL SQUARES EXPLODE WHEN CONTAINING 4 PIECES,"
1110 PRINT:PRINT"HIT ANY KEY TO CONTINUE"
1120 A$=INKEY$:IFA$=""THEN1120ELSECLS
1130 PRINT"WHEN AN EXPLOSION OCCURS THE PIECES ON THE EXPLODING"
1140 PRINT"SQUARE ARE DISTRIBUTED TO ITS NEIGHBOURS. ANY ENEMY"
1150 PRINT"PIECES ON THE LATTER SQUARE ARE CAPTURED AND BECOME"
1160 PRINT"PIECES OF THE MOVER. SHOULD ((RECEIVING)) SQUARES"
1170 PRINT"ATTAIN CRITICAL MASS THEN FURTHER EXPLOSIONS RESULT"
1180 PRINT:PRINT"ANY PLAYER HAVING NO PIECES LEFT AT THE END OF THE"
1190 PRINT"OPPONENT'S TURN LOSES.":PRINT
1200 PRINT"THE GAME CONTAINS SOUND EFFECTS WHICH MAY BE ENJOYED(?)"
1210 PRINT"VIA THE CASSETTE PORT.":PRINT
1220 PRINT"PRESS ANY KEY TO COMMENCE"
1230 A$=INKEY$:IFA$=""THEN1230ELSE RETURN
1250 END

```



**"QS Produce the most
ULTRA-MEGA-AMAZING Games in
the entire known Universe!"**

TIMEGATE

Quicksilver's 1st level two game. The best space/time adventure of 82.

TIMEGATE

High speed graphics combine with electrifying space adventure makes TIMEGATE the game of all games.

Foil the ruling aliens by traveling back through time and blasting out their home planet. Fight 3D space battles on your journey, seeking the time gates that lead to year zero and the salvation of the human race.

Features: 4D, High speed graphics, versatile scanning, status and battle computers, land & take-off from many planets, time-travel, 5 skill levels, score & rating plus free training program.

MORE NEW RELEASES

THE CHESS PLAYER

Who is he? Dare YOU challenge him? Risk high stakes and pit your wits against the chess game with personality, speech and devastating chess skills. THE CHESS PLAYER costs less, while offering you more skill—boosting enjoyment.

Features: 6 skill levels, analysis, copies display and all moves to printer or screen, colour or B & W display, save game at any point, Personality & speech.

SPEAKEASY

Add speech or music to your program in response to massive demand, we have released SPEAKEASY for your own use and enjoyment.

Simply record your sound onto a cassette and play it into your Spectrum via lead. The signal may then be edited and re-played on command from your Basic or M/C program.

NO EXTRA HARDWARE REQUIRED!

Edward de Bono's Classic

L-GAME

Simple rules and complex strategies make the L-GAME an essential for everyone.

Also includes outstanding and complete versions of Mastermind & Pontoon. As featured on T.V. in Edward de Bono's Thinking Course.

L-GAME REACHES THE BITS OTHER GAMES DON'T TOUCH!



SPACE INTRUDERS

Features 4 alien types, random saucer points, 2nd attack wave mutant, exploding aliens, bonus base 50,000 points, left-right & fire, sound effects and colour.

METEOR STORM

3 meteor types, 2 saucers, full screen wrap-around, Bonus ship every 10,000 points, amazing explosions, left-right-thrust-fire & hyperspace, sound effects and speech.



WHAT THEY SAY ABOUT OUR ZX81 GAMES:

QS SCRAMBLE—

"...amazing, fantastic!" [P.C.W.]

QS INVADERS—

"...just like the real thing!" [C & V.G.]

QS ASTEROIDS—

"...very good" "...addictive game..." [C & V.G.]

QS DEFENDER—

"...Better than any other arcade game I've seen..." [Synic]

"...nicest games I've played on the ZX81. All the tapes were impressively packaged..." [Which Micro & S.R.]

**COME AND SEE OUR AMAZING RANGE AT:
THE LONDON HOME COMPUTER SHOW**

[7th, 8th and 9th of Jan]

ZX - 81 GAMES

Scramble m/c 16k £3.95 ☐
Invaders m/c 16k £3.95 ☐
Asteroids m/c 16k £3.95 ☐
Defenders m/c 16k £3.95 ☐

SPECTRUM GAMES

Speakeasy m/c 48k £4.95 ☐ *
Timegate m/c 48k £6.95 ☐ *
The Chess Player m/c 48k £6.95 ☐
Space Intruders m/c 16k £4.95 ☐ *
Meteor Storm m/c 16k £4.95 ☐ *
L-Game Basic 16k £3.95 ☐

Please send me the games as ticked.

Total cheque/P.O. enclosed

Name

Address

***THESE GAMES INCLUDE SPECIAL SEASONAL DISCOUNTS, ORDER NOW
AND GET FREE KEYBOARD OVERLAY!**



Send order to **QUICKSILVER, DEPT 8PC, 92 NORTHAM ROAD, SOUTHAMPTON, SO8 0PS**

(0703) 20169

VISA

MZ LUDO

Quick thinking, an eye for the main chance and a grasp of tactics are what you need to beat the computer at this adaptation of the famous board game Ludo. It may seem simple at first but your Sharp will prove a tough opponent in this battle of wits. If you fancy a more even battle why not take on a friend — the program allows for two players to take part.

All the normal rules of the board game apply here — and the computer will not allow you to cheat!

There's a nice graphic dice to control all the moves and you simply use the 'Space' key to get it rolling.

Remember if you manage to land on an opponent's counter — represented on the Sharp board by graphic characters — it sends him right back where he started from — a very satisfying move!

For those who can't remember the childhood tactics of the game, it's all a question of deciding which piece to push along in front.

I tend towards a one-out, all-out strategy but will let you develop your own tactics to

get your four counters home fastest.

You will need to get an exact move to finish on, so there's a little luck involved at the death but you'll just have to trust your Sharp not to cheat on its dice throws.

It's during games like this that you really notice those Shift-y keys the Sharp has!!!

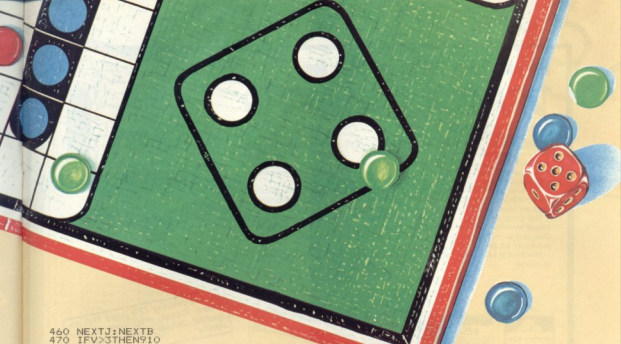
BY FRANK ROONEY

```

100 M$=" _B O C D E F G A B C D E F G A B":TEMPO6:MUSICM$:M$:M$
110 P=53248:G=71:U=46:DIMA(U),E(U),C(4),D(4),K(4),L(4),F(4),B(4),N(4)
120 FORB=1TOU:READA(B):NEXTB:FORF=1TOU:READL(F):NEXTF
130 FORC=1TO4:READK(C):NEXTC:FORD=1TO4:READL(D):NEXTD:GOTO170
140 POKE4466,1:PRINTTAB(26):SPC(13):PRINT"♂":TAB(26):SPC(13)
150 POKE4466,11:PRINTTAB(26):SPC(13):PRINT"♂":TAB(26):SPC(13)
160 POKE4466,10:FORI=1TO5:PRINTTAB(30):SPC(6):NEXTI:RETURN
170 FORD=1TO4:IF(D)=D:D=B(D)=D:NEXTD
180 PRINT"##### How many players ? (1 or 2)"
190 GETPL:IF(PL<1)+(PL>2)THEN190
200 PRINT"♂":IFPL=2THENPRINT"Player 1":PRINT"-----"
210 POKE4466,3:INPUT"Enter your name: ";A$:LA=LEN(A$):IFLA<14THEN230
220 GOSUB290:GOTO210
230 IFPL=1THEN270
240 PRINT"♂♂♂Player 2":PRINT"-----"
250 POKE4466,9:INPUT"Enter your name: ";B$:LB=LEN(B$):IFLB<14THEN270
260 GOSUB290:GOTO250
270 PRINT"♂♂♂Press 'SPACE' to throw the dice."
280 PRINT"♂If you throw a 6 you get another go.":FORI=0TO500:NEXTI:GOTO300
290 PRINT"♂Too long !!":SPC(28):FORI=0TO1000:NEXTI:PRINT"♂":SPC(39):RETURN
300 PRINT"##### Press any key to start ####"
310 GETX$:IFX$=""THEN310
320 T=6:TT=17:GOSUB1320:G=INT(RND(1)*2+1):IFG=2THEN550
330 IFG=2THEN560
339 REM ##### PLAYER 1 #####
340 V=0:T=6:TT=17:GOSUB140:GOSUB770
350 FORD=1TO4:IF(B(D)+X)>UTHENNEXTD:GOSUB890:GOTO480
360 M=PEEK(P+A(B(D)+X))
370 IF(M=67)+(M=108)+(M=208)+(M=74)THENNEXTD:GOSUB890:GOTO480
380 GOSUB820
390 IF(B(D)+X)>UTHENGOSUB850:GOTO380
400 M=PEEK(P+A(B(D)+X)):FORJ=1TO4:IFM=K(J)THENGOSUB850:GOTO380
410 NEXTJ
420 FORC=1TO4:IFM=L(C)THEN520
430 NEXTC
440 USR(62):GOSUB500
450 FORJ=43TOU:FORJ=1TO4:IFPEEK(P+A(B))=K(J)THENV=V+1

```

RUNS ON A SHARP MZ-80K IN 32K



```

460 NEXTJ:NEXTB
470 IFV>3THEN910
480 IFX=6THEN340
490 G=2:GOTO550
500 POKEP+A(B(D)),0:B(D)=B(D)+X:FORZ=0TO9:
    POKEP+A(B(D)),0:FORI=0TO50:NEXTI
510 POKEP+A(B(D)),K(D):FORI=0TO50:NEXTI:NEXTZ:RETURN
520 MUSIC"D1B"DG3":GOSUB500
530 FORB=1TO4:IFPEEK(P+E(B))=0THENPOKEP+E(B),M:F(C)=B:GOTO450
540 NEXTB
550 IFPL=1THEN930
559 REM ***** PLAYER 2 *****
560 W=0:T=17:TT=6:GOSUB140:GOSUB770
570 FORD=1TO4:IF(F(D)+X)>UTHENNEXTD:GOSUB890:GOTO700
580 N=PEEK(P+E(F(D)+X))
590 IF(N=65)+(N=83)+(N=68)+(N=70)THENNEXTD:GOSUB890:GOTO700
600 GOSUB820
610 IF(F(D)+X)>UTHENGOSUB850:GOTO600
620 N=PEEK(P+E(F(D)+X)):FORJ=1TO4:IFN=L(J)THENGOSUB850:GOTO600
630 NEXTJ
640 FORD=1TO4:IFN=K(C)THEN740
650 NEXTC
660 USR(62):GOSUB720
670 FORF=43TOU:FORDJ=1TO4:IFPEEK(P+E(F))=L(J)THENW=W+1
680 NEXTJ:NEXTF
690 IFW>3THEN910
700 IFX=6THEN560
710 B=1:GOTO340
720 POKEP+E(F(D)),0:F(D)=F(D)+X:FORZ=0TO9:POKEP+E(F(D)),0:FORI=0TO50:NEXTI
730 POKEP+E(F(D)),L(D):FORI=0TO50:NEXTI:NEXTZ:RETURN
740 MUSIC"D1B"DG3":GOSUB720
750 FORF=1TO4:IFPEEK(P+A(F))=0THENPOKEP+A(F),N:B(C)=F:GOTO670
760 NEXTF
770 POKE4466,T:PRINTTAB(30):"THROW"
780 FORI=0TO9:NEXTI:PRINT"@";TAB(30):SPC(5)
790 GETX#:IFX#=""THEN770
800 GOTO1180
810 RETURN
820 POKE4466,T:PRINTTAB(26):"Which piece ?"
830 GETD:IF(D<1)+(D>4)THEN830
840 PRINTTAB(31):"@";D:RETURN
850 POKE4466,T:PRINTTAB(26):SPC(13):MUSIC"G1_DG_DG_D":FORZ=0TO9
860 POKE4466,T:PRINTTAB(28):"ILLEGAL !!!":FORI=0TO25:NEXTI
870 PRINT"@";TAB(26):SPC(13):FORI=0TO25:NEXTI:NEXTZ
880 PRINT"@";TAB(26):SPC(13):RETURN
890 MUSIC"G1_DG_DG_D":POKE4466,T:PRINTTAB(26):"You can't go!"
900 FORZ=1TO1500:NEXTZ:RETURN
910 MUSICM#;M#;M#:POKE4466,T:PRINTTAB(26):" YOU WIN !!!":GOTO1120
920 FORZ=0TO5000:NEXTZ:RETURN
929 REM ***** COMPUTER *****
930 W=0:T=17:TT=6:GOSUB140:GOTO1180
940 FORD=1TO4:IF(F(D)+X)<UTHENN(D)=PEEK(P+E(F(D)+X))
950 FORD=1TO4:IFN(D)=K(C)THEN1060
960 NEXTC:NEXTD
970 FORD=1TO4:IF(F(D)+X)<U,*(N(D)=0)THENUSR(62):GOSUB1040:GOTO990

```

For your Tandy TRS-80 and Video Genie DRACULA ISLAND

We've capitulated! So many people have asked for a Kansas quality Adventure, that finally, here it is.

This has all the ingredients of the traditional adventure plus an involved plot, which will take a great deal of solving.

The aim is to get rid of Dracula, but of course you have to find him, and at the same time have the correct objects at the correct time all the way throughout, otherwise you will not get very far.

There are countless locations, objects and happenings, with the game operated in the normal way with either single key entries for the regular used words and the program operated with two separate words throughout.

The programmer says it will take on average three weeks to solve! But unlike normal adventures, this one can be saved to tape, thus allowing you to load the saved data, and so resume at the same place and time and with the same objects as you previously left the game.

Needless to say, as our very first adventure, it's a good one. It's machine language of course!

£9.50



If you have a BBC Micro ask to get on our BBC program mailing list — and see the difference!

We are offering TEN good TRS-80 Video Genie programs in our annual January sale — ask for details.

Kansas

Recognised brand leader in microcomputer software The only company giving a lifetime unconditional guarantee and assured return first class post service.

Kansas City Systems, Unit 3, Sutton Springs Wood, Chesterfield, S44 5XF. Tel. 0246 850357

NOW YOU HAVE YOUR HOME COMPUTER/VIDEO GAME

HOME COMPUTER SOFTWARE

FOR ATARI 400/800

Caverns of Mars R £29.95+p&p
Centipede R £29.95+p&p
Pacman R £29.95+p&p
Star Raiders R £29.95+p&p

THE BEST THIRD PARTY SOFTWARE

Chop Litter R £29.95+p&p
Shamus C.D. £29.95+p&p
Sam Voice Sam D £29.95+p&p

THORN EM1

Jumbo Jet £29.95+p&p
Sub Commander £29.95+p&p
Soccer £29.95+p&p
Darts £29.95+p&p
Pool £29.95+p&p

INTECOM INTELLIG

Intecom Intelligent Series £29.95+p&p

R-ROM C-CASSETTE D-DISK

TEXAS

Munchman R £29.95+p&p
T1 Invaders R £29.95+p&p
Car Wars R £29.95+p&p
Chess R £29.95+p&p

Adventure C £29.95+p&p
Mission Impossible C £29.95+p&p
Savage Island I & II C £29.95+p&p
Pyramid of Doom C £29.95+p&p
Adventure & Pirate H.C. £29.95+p&p

Software stocked for SINCLAIR ZX81

Full range of Texas Educational Programmes From £9.95

BRING OR POST THIS AD FOR
50% DISCOUNT
JAN ONLY

WHAT ABOUT THE SOFTWARE?

VIDEO GAME SOFTWARE

FOR ATARI

ET £29.95+p&p
Star Raiders £29.95+p&p
Volleyball £29.95+p&p
Defender £29.95+p&p
Y&B's Revenge £29.95+p&p
Berzerk £29.95+p&p

IMAGIC

Atlantis £24.95+p&p
Demon Attack £24.95+p&p
Star Voyager £24.95+p&p
Riddle of the Sphinx £24.95+p&p
Cosmic Ark £19.95+p&p

Callers welcome 5 days per week at all stores
Please add 50p p&p per item

ACTIVISION

StarMaster £29.95+p&p
Barracade £29.95+p&p
Pitfall £29.95+p&p
Megamania £29.95+p&p

PACKER BROS

Spiderman £29.95+p&p
Amstar £29.95+p&p
Frogger £29.95+p&p
Empire Strikes Back £29.95+p&p

FOR INTELLIVISION

Solar Sailor £29.95+p&p
Iron 2 £29.95+p&p
Space Spartan £29.95+p&p
B17 Bomber £29.95+p&p
Dungeons to Dragons £29.95+p&p

FROM IMAGIC

Atlantis £24.95+p&p
Maze Surgen £24.95+p&p
Beauty & the Beast £24.95+p&p
Seaside of Georgia £24.95+p&p



CREDIT CARD HOTLINE
TEL: 01 636 9613

Our range of software grows weekly. Send s.a.e. for more titles.

LANDAU ELECTRONICS

THE HOME COMPUTER & GAMES SPECIALIST

LANDAU ELECTRONICS (Dept 001) LION HOUSE,
227 TOTTENHAM COURT ROAD, LONDON W1.

LOW PRICES INC. V.A.T.
PROMPT DESPATCH

ALSO AT
216 HIGH STREET,
SUTTON SURREY
Tel. 01-643 5494

IN STORE AT

ATARI 400 NOW ONLY £199.95 + £5 p&p
800 £399.95 + £5 p&p (INC. BASIC)

TEXAS 199 £199.95 + £5 p&p
BONUS R.R.P. £299.950
REBATE CHEQUE FROM TEXAS

NOW IN STOCK VIC 64

TEMPO
180 KENSINGTON HIGH ST
LONDON, W8. Tel. 01-937 0291

```

980 NEXTD:GOTO1100
990 FORF=43TOU:FORDD=1TO4:
    IFPEEK(P+E(F))=L(DD) THENW=W+1
1000 NEXTDD:NEXTF
1010 IFW>3THEN1110
1020 IFX=6THEN930
1030 G=1:GOTO340
1040 POKEP+E(F(D)),O:F(D)=F(D)+X:FORZ=0TO9:POKEP+E(F(D)),O:FORI=0TO50:NEXTI
1050 POKEP+E(F(D)),L(D):FORI=0TO50:NEXTI:NEXTZ:RETURN
1060 MUSIC="D1B"DB3":GOSUB1040
1070 FORB=1TO4:IFPEEK(P+A(B))=0THENPOKEP+A(B),N(D):B(C)=B:GOTO990
1080 NEXTB
1090 MUSIC"G1-DG-DG-D"
1100 POKE4466,17:PRINTTAB(27):"Can't go!":FORZ=1TO1500:NEXTZ:GOTO1020
1110 MUSICM:M=M:POKE4466,17:PRINTTAB(26):" I WIN !!!"
1120 FORZ=1TO5000:NEXTZ
1130 PRINT:GOSUB1140
1140 GETX$:IFX$="" THEN1140
1150 IFX$="Y" THEN170
1160 IFX$="N" THENPRINT"G":END
1170 GOTO1140
1179 REM DICE
1180 H=0:FORX=1TO6:GOSUB1200:NEXTX
1190 H=1:X=INT(RND(1)*6+1)
1200 ONXGOTO1210,1220,1230,1240,1250,1270
1210 GOSUB140:POKEP+512,S:GOTO1290
1220 GOSUB160:POKEP+473,S:POKEP+551,S:GOTO1290
1230 GOSUB160:POKEP+434,S:POKEP+512,S:POKEP+590,S:GOTO1290
1240 GOSUB160:POKEP+430,S:POKEP+434,S:POKEP+590,S:POKEP+594,S:GOTO1290
1250 GOSUB160
1260 POKEP+430,S:POKEP+434,S:POKEP+512,S:POKEP+590,S:POKEP+594,S:GOTO1290
1270 GOSUB160:POKEP+430,S:POKEP+434,S:POKEP+510,S:POKEP+514,S:POKEP+590,S
1280 POKEP+594,S:GOTO1290
1290 IFH=0THENRETURN
1300 IF(PL=1)*(G=2) THEN940
1310 GOTO810
1320 PRINT"G":
1330 PRINT"      ":TAB(32-INT(LA/2)):A$
1340 PRINT"      ":TAB(32-INT(LA/2)):
1350 FORI=1TOA-1:PRINT"  ":NEXTI:PRINT"  "
1360 PRINT"  "
1370 PRINT"  "
1380 PRINT"  "
1390 PRINT"  "
1400 PRINT"  "
1410 PRINT"  "
1420 PRINT"  "
1430 PRINT"  "
1440 PRINT"  "
1450 PRINT"  "
1460 PRINT"  "
1470 PRINT"  "
1480 PRINT"  "
1490 PRINT"  "
1500 PRINT"  "
1510 PRINT"  "
1520 PRINT"  "
1530 PRINT"  "
1540 PRINT"  "
1550 PRINT"  "
1560 PRINT"  "
1570 PRINT"  "
1580 PRINT"  "
1590 PRINT"*****":IF(PL=1)*(LA<9) THENPRINTTAB(17-INT(LA/2)):A$:GOTO1620
1600 IFPL=1 THENPRINTTAB(16):"YOU":GOTO1620
1610 PRINTTAB(14):"PLAYER 1"
1620 POKE4466,19
1630 IFPL=2 THENPRINTTAB(4):"PLAYER 2":PRINT"*****":TAB(32-INT(LB/2)):B$
1640 IFPL=2 THENPRINTTAB(32-INT(LB/2)):FORI=1TOB-1:PRINT"  ":NEXTI:PRINT"  "
1650 IFPL=1 THENPRINT"*****COMPUTER":PRINTTAB(28):"*****COMPUTER*****"
1660 RETURN
1670 DATA207,287,367,369,371,291,211,131,51,49,47,45,43,41,121,201,281,361
1680 DATA441,521,601,681,761,841,921,923,925,927,929,931,933,935,937,939,941
1690 DATA943,863,783,703,623,543,463,461,459,457,455
1700 DATA777,697,617,615,613,693,773,853,933,935,937,939,941,943,863,783,703
1710 DATA623,543,463,383,303,223,143,63,61,59,57,55,53,51,49,47,45,43,41,121
1720 DATA201,281,361,441,521,523,525,527,529
1730 DATA67,108,208,74,65,83,68,70

```

BBC**ELTEC SERVICES LTD****BBC MICRO COMPUTERS**

BBC Model "A" (in stock now)	£299.00
BBC Model "B" (in stock now)	£399.00
BBC Model "A" plus extra 16K memory	£330.00

16K Hitachi memory (as fitted by ACORN) £31.00

FULL UPGRADE KIT (Genuine ACORN issue)	£90.00
UPGRADE KIT fitting charge	£10.00

14" Full colour MONITOR (used in BBC computer programmes)	£309.35
12" Green Screen MONITOR	£126.00
RGB Monitor lead	£5.00
Monitor leads	£5.00
Cassette Recorder (recommended)	£28.00
Cassette lead (7 pin DIN/3 JKS PLUS matching resistor for reliable saving)	£5.00
Blank Cassettes SCOTCH 3M C-10	£8.00

SOFTWARE

Sinclair (UK) Software cassettes 1-7	from £3.95
AGENTS for BUG BYTE software	
AGENTS for PROGRAM POWER software	
FULL RANGE of ACORN/SCOTCH BBC CASSETTES	all £9.95
ELTEC PRO-DIS Disassembler	£6.85
BEEBSTICK — Fully proportional joystick for drawing and games	£29.95

SEND SAE FOR OUR SOFTWARE PRICE LIST

ELTEC SERVICES LTD

231 Manningham Lane, Bradford BD8 7HH Tel: (0274) 491372

OPEN Mon-Fri 9am-5pm Sat 9am-12 noon.

BOOKS

NEC 30hr Basic	£5.50
Practical Programmes for the BBC Computer Johnson-Davies	£5.95
Basic Programming on the BBC Microcomputer Cryer	£5.95
WIDE RANGE OF BOOKS on the PROGRAMMING of the 6502	
SEND SAE FOR OUR BOOK LIST	

16K Hitachi memory (as fitted by ACORN)	£31.00
FULL UPGRADE KIT (Genuine ACORN issue)	£90.00
UPGRADE KIT fitting charge	£10.00

PRINTERS

Seikosha GP100A	£225.00
EPSON MX80 F/T III	£390.00
EPSON MX100 F/T III	£530.00
SMITH CORONA Daisy Wheel Printer	£557.00
Printer Cable	£18.40

ATOM MICROCOMPUTER

Extra Memory (2114L)	per K £2.20
Floating point ROM	£21.00
ACORN 96K DiskPack	£343.00
Disk Buffer Pack	£11.20
DISATOM SUPER ROM — The most powerful toolkit yet	£29.85
4 Socket software utility switch	£22.95

Prices are VAT INCLUSIVE

P&P £1.00 for orders under £100.00:

Orders over £100.00 add £10.00 for a Securicor Delivery

M. C. LOTHLORIEN**SPECTRUMS and DRAGONS!**
(not forgetting ZX81)

A fantastic range of 16K games, each complete with fully comprehensive instructions

1. TYRANT OF ATHENS.

Can you survive long enough to turn Athens into the most feared state in the Mediterranean? Train troops, build warships, fight battles by land and sea against hostile Greek States and the vast Persian Empire. Many more features in this very addictive game. Dragon version uses high resolution graphics to produce a map of the E. Mediterranean on which the naval battles are fought.

Price: DRAGON £6.95 ZX81 £4.50 SPECTRUM £5.50

2. ROMAN EMPIRE.

Your aim is to conquer the hostile countries surrounding Rome. Build armies, appoint Generals and fight campaigns. This challenging game takes full account of morale, fighting efficiencies, leadership ability, etc. 3 levels of play.

Price: ZX81 £4.50. Spectrum £5.50

3. PELOPONNESIAN WAR.

Set in Ancient Greece from 431-404 BC, covering the great War between Athens and Sparta. Your goal is a final victory over the Spartans but you will need all your skill in a combination of diplomacy and military force before you even stand a chance. 3 levels of play.

Price ZX81 only £4.50

4. SAMURAI WARRIOR.

Set 4 centuries before the film "Shogun" you can discover how you would have fared as a Samurai in 13th Century Japan. Face challenges from Samurai and bandits. Are you a survivor? Or will you be forced to commit ritual suicide? 7 levels of play. A most fascinating game.

Price: DRAGON £6.95 ZX81 £4.50 Spectrum £5.50

5. WARLORD.

Have you got the opportunism and strategic ability to control a village and army like the Warlords of Old Japan? Rule your subjects, trade for food, attack pirates and make raids for gold and slaves. As if this were not enough you must also face combat challenges from other Warlords and their Samurai and defeat attacks from their armies. Dragon version uses H/R graphics for a map of Japan for pirate battles and graphics for Samurai and land battles.

Price: DRAGON £6.95 ZX81 £4.50

Cheques and POs please, made payable to: M. C. LOTHLORIEN.

Dept. Cl, 4 Granby Road, Cheadle Hulme, Cheadle, Cheshire SK8 6LS

100 FREE PROGRAMS FROM SILICA SHOP — WITH EVERY PURCHASE OF AN ATARI 400 OR 800



ATARI PRICES REDUCED!

We at Silica Shop are pleased to announce some fantastic reductions in the prices of the Atari 400/800 personal computers. We believe that the Atari at its new price will become the U.K.'s most popular personal computer and have therefore set up the Silica Atari Users Club. This club already has a library of over 500 programs and with your purchase of a 400 or 800 computer we will give you the first 100 free of charge. There are also over 350 professionally written games and utility programs, some are listed below. Complete the reply coupon and we'll send you full details. Alternatively give us a ring on 01-301 1111 or 01-309 1111.

ATARI 400
with 16K **£199**

ATARI 400
with 32K **£248**

ATARI 800
with 16K **£349**

400/800 SOFTWARE & PERIPHERALS

Don't buy a T.V. game! Buy an Atari 400 personal computer and a game cartridge and that's all you'll need. Later on you can buy the Basic Programming cartridge (£35) and try your hand at programming using the easy to learn BASIC language. Or if you are interested in business applications, you can buy the Atari 800 + Disk Drive + Printer together with a selection of business packages.

Silica Shop have put together a full catalogue and price list giving details of all the peripherals as well as the extensive range of software that is now available for the Atari 400/800. The Atari is now one of the best supported personal computers. Send NOW for Silica Shop's catalogue and price list as well as details on our users club.

THE FOLLOWING IS JUST A SMALL SELECTION FROM THE RANGE OF ITEMS AVAILABLE:

ACCESSORIES
Mountain Short
Cables
Coverters
Disables
Joysticks
Jo Stick - joystick
Misc Supplies
Paddles

ADVENTURE INT

South Atlantic Air

No 1 - Adventureland

No 2 - Prisoner

No 3 - Mission Trip

No 4 - Voodoo Cast

No 5 - The Count

No 6 - Strange Day

No 7 - Mystery Fun

No 8 - Ghost Train

No 9 - Space Island 2

No 10 - Golden Voyage

No 11 - Golden Voyage

No 12 - Golden Voyage

No 13 - Golden Voyage

No 14 - Golden Voyage

No 15 - Golden Voyage

No 16 - Golden Voyage

No 17 - Golden Voyage

No 18 - Golden Voyage

No 19 - Golden Voyage

No 20 - Golden Voyage

No 21 - Golden Voyage

No 22 - Golden Voyage

No 23 - Golden Voyage

No 24 - Golden Voyage

No 25 - Golden Voyage

No 26 - Golden Voyage

No 27 - Golden Voyage

No 28 - Golden Voyage

No 29 - Golden Voyage

No 30 - Golden Voyage

No 31 - Golden Voyage

No 32 - Golden Voyage

No 33 - Golden Voyage

No 34 - Golden Voyage

No 35 - Golden Voyage

No 36 - Golden Voyage

No 37 - Golden Voyage

No 38 - Golden Voyage

BUSINESS

Calculator

Calendar Management

Decision Maker

Graph It

Investing

Librarian

Mort & Loan Anal

Personal Ledger

Project Manager

Real Estate

Star Wars

Temple of Apeh

Travel

Voice

Weekly Planner

Word Processor

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

Crystalware

DYNAMCOMP

Alpha Fighter

Chameleon

Crystal

Forest Fire

Invader Alert

Music

Murder

My First Alphabet

Number Blind

Polycat

Presidents Of U.S.

Quiz Master

Snake

Space Tilt

Space Trip

Star Wars

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

EDUCATION

Alpha Fighter

Chameleon

Crystal

Forest Fire

Invader Alert

Music

Murder

My First Alphabet

Number Blind

Polycat

Presidents Of U.S.

Quiz Master

Snake

Space Tilt

Space Trip

Star Wars

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

ENTERTAINMENT

Alpha Fighter

Chameleon

Crystal

Forest Fire

Invader Alert

Music

Murder

My First Alphabet

Number Blind

Polycat

Presidents Of U.S.

Quiz Master

Snake

Space Tilt

Space Trip

Star Wars

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

PERIPHERALS

Alpha Fighter

Chameleon

Crystal

Forest Fire

Invader Alert

Music

Murder

My First Alphabet

Number Blind

Polycat

Presidents Of U.S.

Quiz Master

Snake

Space Tilt

Space Trip

Star Wars

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

Super Soccer

PERIPHERALS

Alpha Fighter

Chameleon

Crystal

Forest Fire

Invader Alert

Music

Murder

My First Alphabet

Number Blind

Polycat

Presidents Of U.S.

Quiz Master

Snake

Space Tilt

Space Trip

Star Wars

```

100 REM ***TX SOFTWARE***
110 REM R.MATTHEWS (1982)
120 REM *****
130 DIM A(32):: A(1),A(2),A(3),A(31),A(30),A(31),A(32)=25
140 RANDOMIZE :: CALL MAGNIFY(3):: CALL COLOR(9,2,6,11,1,5,13,1,1)
145 CALL SCREEN(6):: CALL INSTRUCTIONS(PN)
150 A1$= "80C0FFFFF3F78"&RPT$(0,22)&"FCFEFE8"
160 A2$="00011F3F3F0F7F7FFFFFD5557F0000000E0FFE0E080FEFFFFFE5454FC"
170 A3$="FFFF"
180 A4$=RPT$(0,16)&"293B7FFFFFFF7F7F3F"&RPT$(0,16)&"80E0F5FEFFFFFFF1C"
190 A5$="293B7FFFFFFF7F7F3F07070303070F7F80E0F5F5FFFFFFFCCE0C0C0E0F0FF"
200 A6$="34599D45B5AC7CB7EFF7EFFFCA425149"
210 A7$="E0404040"
220 A8$="7F7F6666F7F6666"
230 A9$="FEFE6666FEFE6666"
235 CALL CHAR(96,A1$,108,A2$,112,A3$,116,A4$,120,A5$)
236 CALL CHAR(124,A6$,104,A7$,132,A8$,128,A9$)
240 CALL CLEAR :: FOR J=4 TO 28 STEP 2 :: HT=INT(RND*10)+1
245 CALL VCHAR(24-HT,J,132,HT)::CALL VCHAR(24-HT,J+1,128,HT)
250 A(J),A(J+1)=24-HT :: NEXT J :: CALL COLOR(13,2,6):: CALL HCHAR(24,1,112,32)
260 CALL SPRITE(#2,96,5,10,1,0,35)
265 CALL SPRITE(#4,108,16,178,100,0,5,5,108,11,178,20,0,5)
266 CALL SPRITE(#6,108,12,178,180,0,5)
270 CALL KEY(1,K,S):: IF S THEN GOSUB 280 ELSE SC=SC-PN
271 GOTO 270
280 CALL POSITION(#2,X,Y)::CALL LOCATE(#2,X+1,Y)
285 CALL SPRITE(#3,104,16,X,Y,50,0):: CL=INT(Y/8.01)+1 :: X1=INT(X/8.01)+3
290 IF CL<4 OR CL>30 THEN 330
300 CALL COINC(ALL,C):: IF C THEN 360 ELSE CALL POSITION(#3,X,Y)
305 IF X>184 THEN 330 ELSE RW=INT(X/8.01)+1 :: IF RW<A(CL) THEN 300
310 CALL SPRITE(#3,124,2,X,Y,-20,0):: CALL SOUND(-200,-5,0)
315 CALL VCHAR(RW-2,CL,32,3) :: A(CL)=RW+1
320 SC=SC+10 :: DISPLAY AT(1,1):SC
330 CALL DELSPRITE(#3):: IF X1<16 THEN RETURN
340 FOR J=4 TO 29 :: IF A(J)<X1 THEN 380
350 NEXT J :: RETURN
360 CALL SPRITE(#3,116,16,176,Y,0,0):: CALL SOUND(-500,-5,0)
365 SC=SC+(75-RW)*4 :: DISPLAY AT(1,1):SC
370 CALL PATTERN(#3,120):: IF RND<.5 THEN 360 ELSE 330
380 CALL SOUND(-4000,-3,0,400,0)
385 FOR DEL=1 TO 1500 :: NEXT DEL ::RUN
390 STOP
400 SUB INSTRUCTIONS(PN) :: CALL CLEAR
410 DISPLAY AT(1,8):"TARGET" :: DISPLAY AT(2,8):"====="
420 DISPLAY AT(5,1):"USE ANY KEY TO DROP BOMB."
430 DISPLAY AT(9,1):"CHOOSE OPTION PLEASE"
440 DISPLAY AT(13,1):"EASY OPTION";TAB(26);"(1)"
440 DISPLAY AT(15,1):"HARD OPTION"
450 DISPLAY AT(16,1):"(NEGATIVE SCORING)";TAB(26);"(2)"
460 DISPLAY AT(16,1):"IF ST=0 THEN 470"
470 CALL KEY (0,KY,ST):: CALL SOUND(-20,900,20):: IF ST=0 THEN 470
480 IF KY=49 OR KY=50 THEN PN=KY-49 ELSE 470
500 SUBEND
600 REM *****
601 REM LINES 150 TO 210 DEFINE CHARACTERS .. EXPERIMENT HERE!
610 REM A1$.. PLANE
620 REM A2$.. TANK
630 REM A3$.. ROAD
640 REM A4$,A5$,A6$.. EXPLOSIONS
650 REM A7$.. BOMB
660 REM A8$,A9$..BUILDINGS
670 REM *****
680 REM SPRITE #2..PLANE
690 REM SPRITES #4,#5,#6..TANKS
700 REM SPRITE #3..BOMB
710 REM *****
720 REM INCREASE DIFFICULTY LEVEL BY INCREASING SPEED OF SPRITE(#2)
725 REM ALSO HEIGHT OF BUILDINGS CAN BE CHANGED IN LINE 240
730 REM TANKS CAN BE SPEEDED UP OR SLOWED DOWN IN LINES 265 AND 266
735 REM ARRAY 'A()' KEEPS CHECK OF HEIGHT OF EACH BUILDING
740 REM AS AN ALTERNATIVE TO 'RUN' IN 385 YOU CAN CHECK FOR HIGHEST SCORE TO
750 REM DATE ..HIGHEST=MAX(SC,HIGHEST) AND GOTO 240 . HIGHEST SCORE CAN THEN
760 REM BE DISPLAYED
800 REM ALL REMS MAY BE DELETED
900 END
READY.

```

TARGET

RUNS ON A TI 99/4A IN 16K BY R. MATTHEWS

You are the pilot of a jet fighter on a kamikaze mission. Your task is to bomb a city occupied by enemy troops and cause as much destruction as possible before your jet crashes into the flaming ruins. Enemy tanks are racing through the city streets and these must also be destroyed before

they manage to find shelter. They can only be hit when your bombs have cleared gaps in the buildings.

But all the time you are blasting away at the city below your jet is losing altitude — and it's only a matter of time before it crashes — so you have to move fast to complete

your mission.

Program notes: A1\$ to A9\$ define character shapes. Miskeying will not affect the running of the program — but it will produce some odd shapes! A variable A(31) is defined twice in line 130. This is unnecessary and one of them may be deleted before copying.



Let Commodore expand your horizons.

VIC 20 is the finest home computer that money can buy.

And the better you get to know it, the more confident, adventurous and ambitious you'll become.

You'll want to take advantage of the vast range of VIC software: a superb and constantly-growing selection of programs, embracing business systems, entertainment, education and many applications in the home.

Every program in the series has been designed by experts, and chosen for its quality and value for money.

VIC business software covers a wide range of applications, including spread-sheet analysis, stock control, information handling and word-processing.

A mind-blowing range of games including Scott Adams' world-famous 'Adventure' series.

Advanced space games, including the sophisticated 'Omega Race'.

Learn subjects as diverse as English Language, programming, and biology.

And 'home' software ranges from IQ tests to Robert Carrier menus.

In addition, there is a range of VIC software, like programmers' aids and graphics packages—

to add to your understanding and enjoyment of computers and computing.

There's even a special 'VicSoft' Club for VIC 20 enthusiasts, with many advantages including special offers to club members.





VIC software will expand your horizons. And your mind.

PRICES RANGE FROM £4.99 to £24.95 INC. VAT.



commodore
VIC 20

For more information, a catalogue of VIC software and details of your local retailers or dealers please phone or complete the coupon and send to:

The Commodore Information Centre,
675 Ajax Avenue, Slough, Berkshire SL1 4BG.
Telephone: Slough (0753) 79292.

Name _____
[MR./MRS./MISS]
Address _____

Postcode

VCCVG 01/83

PUZZLING

BY TREVOR TRURAN

CAN YOU STEM THE ALIEN TIDE?

If all the arcade aliens were joined tentacle to antenna the line would stretch very nearly from Hazelbury Plunknett to furthest Wollumboolawonga.

The link can be completed provided you and your trusty laser can give the deep fried treatment to these, the latest misguided monsters who have crossed the Cosmos in the belief that Earth is their new paradise.

The puzzle can be solved by hand and brain right here on the page (may we recommend a piece of thin paper laid on top, so that several attempts can be carried out?) or a program can be written which will achieve the task in the most efficient manner.

To begin: place your gun on any of the firing positions A to F and loose off a shot. This, as in all future firings, will have two effects: One alien lying on that vertical line will be destroyed and that firing position will have its value (shown by the number) reduced by one. Enter the new value in the grid below the firing range and prepare to move.

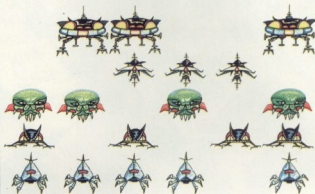
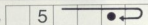
After each shot you must move your gun the distance in squares equal to its current value. You can move to right or left but must proceed in one direction unless the value of the square would take you beyond the firing range.

In this case you "bounce" back from the end square, as our sample picture shows.

At the end of your move you must fire the laser and reduce the value of that square by 1 even though there may be no aliens to shoot at. You must be sure never to land on a square and reduce its value to zero as you will then be stuck and the rest of the gang will land — with consequences dire to the future of the human race.

True success will only come if you can complete the task in the

Example
of bounce



A	B	C	D	E	F
5	6	7	5	4	6

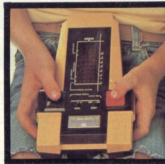
Enter each
new value here

lowest possible number of moves.

Remember this is no easy entanglement with a bunch of alien E.T. wets, but the future of this very Earth is at stake. Realising the gravity of the situation, the editor of this magazine feels prompted to reward three space-war heroes who find the correct solution.

Try a few rough attempts first to work out how the aliens move.

Send your lowest solution to: Space Attack Competition Computer & Video Games, Durrant House, 8, Herbal Hill, London EC1R 5JB, before January 12. The first three out of the hat will win hand-held space invader machines.



If you can beat the Puzzling pages' space invaders, then you could have a chance to tackle invaders on the Galaxy Invader 1000.

Three of Computer Games Ltd's hand-held space invader games are up for grabs for the first three answers with the best solutions out of the hat.

The Galaxy Invader has three skill levels, two colour graphic display and scores up to 999 with extra missile stations for scores over 700.

Make sure your entry is with us before January 12th 1983.

DEFEAT THIS WORDY HORROR

This relic (right) from the primordial past is in urgent need of taming before it leaves its dark unfathomed cave and starts chewing up fair damsels, post office towers and Clive Sinclair.

To do this, drop one letter from those used in the line above and arrange the remaining letters to form a word or words.

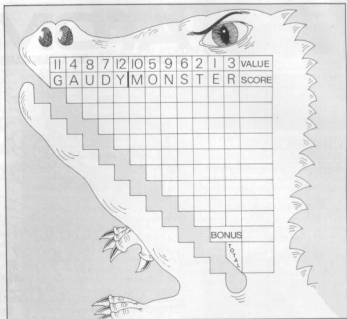
Words, to be valid fodder for our toothsome fiend, must be of three letters or more and must be bold type entries in *Chambers's Twentieth Century Dictionary, Revised Edition*.

Words must not overlap along the line and must be separated by a bar. A word once used must not be repeated on any subsequent line.

Each line scores the total of all the letter values which appear in it. The letter values are shown above the top line. So keeping "Y" in is worth extra points.

A bonus can be scored for each word which is of five or more letters and is equal to the length of the word: a five-letter word gains five extra points and so on.

When you have entered the score for each line add on the sum of your bonuses to give the final grand total — the greater that is, the more peaceful the leviathan.



UNSCRAMBLE THE ONMIDOSE

This somewhat bizarre title is a direct indication as to just what is the problem below — dominoes have been scrambled.

Not that the event caused any grief to Ephraim Wheel, rather the opposite.

He was so delighted that his

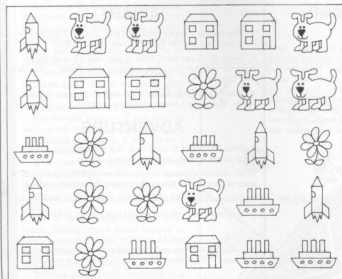
daughter, Daisy, had managed to arrange her complete set of picture pairs into a six by five rectangle that he quickly drew the layout for posterity.

It mattered not that the girl had paid scant regard to the usual rule that adjacent dominoes should have the same picture touching, at a few days over 18 months, it was a miracle to the proud father that geometric genius had manifested itself at so early an age.

Hence, as we have remarked, the quick drawing... Too quick, in fact, as Ephraim has omitted the lines which show the separate dominoes.

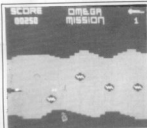
It is not too difficult a task to find the unique way in which the cards were laid out, bearing in mind that with 5 different pictures, all the different arrangements of possible pairs are present somewhere.

Can you draw the dividing lines and so complete the picture for Ephraim?



The solutions to these two puzzles and the winners of our November Mastermind competition can be found on page 11 of this issue. Try them before you look out an answer.

PULLING

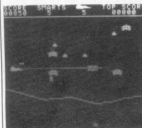


OMEGA MISSION £7

The first and only version of the superb *Omega Mission* (with moving landscapes) fly over mountains, through caves and valleys, different planets, forests, sea, mountains, fire, rain, space craft, monsters and the unique rotating Tunnel. Movement in 4 dimensions, laser vision. Excellent GZ/CA graphics, super Black & White on monochrome T.V. made by Sound Effects. Top score.

THE PROTECTOR £7

The most complete version of this amazing Arcade game available for the Atom. Control your miniature monster and destroy the Atom in this hyper fast, action packed game. Moving planetary surface, rotating sun and stars, heads, throat, super increasing Attack Wave, 4 types of Atom, sound Effects. Top score and excellent made 4 graphics are some of the features in this exciting game.

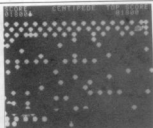


ATOM

ACTION PACKED M/CODE ARCADE GAMES



ALL 12K RAM
PRICES INCLUDE P&P. FAST 2 DAY DESPATCH
micromania
14 LOWER HILL RD. EPSOM. SURREY.

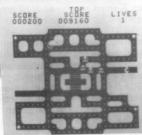


CENTIPEDE £6

The first and only version of this popular Arcade game for the Atom. Shows down the spinning centipede as it crawls through the mushroom screen, increases until only 400 and quick thinking can save you. Excellent high speed made 4 graphics, Sound Effects and Top score.

PUCKMAN £5

One of the best versions of this popular Arcade game (clown game). Eat all the dots on the screen but watch out for the hungry ghosts. Eat an Energy Blob and the chain reverses. Each score cleared brings a new one with four ghosts. Excellent high speed made 4 graphics, Sound Effects and Top score.



ZX81
16K

SPECTRUM
16/48

DRAGON
TRS COLOR

TANDY
LEVEL 2

BBC
A/B

FANTASTIC VOYAGE

(ZX81 16K ONLY)

This real-time graphics adventure set inside the human body was written by a lecturer in anatomy. You are injected into the blood stream in your miniature submarine. Navigate the arteries, veins and heart to the brain, where a blood clot must be destroyed. Features a real vascular map. You will be attacked by lymphocytes which must be destroyed using arcade game type graphics. Everything you do uses up precious energy. Three display formats—a lateral and frontal body scan plus blood vessel name, a close-up scan and a laser-sight for fighting lymphocytes.

ALL GAMES £5.95 EACH, 2 FOR £9.95, 3 FOR £13.95
(ANY MIX) INCLUSIVE.

DEPT. PR5.
66 LITTLEDEAN,
YATE,
BRISTOL BS17 4UQ

AWARI

- ★ The ancient African game of logic. It takes 2 minutes to learn the rules but far longer to master the tactics.
- ★ Select the 'Goat-herd' level of play and it's an addictive game for children-(8+) that exercises their minds—not their laser fingers.
- ★ Select the 'Witch-doctor' level and it's a threat to your sanity. We haven't beaten it and we wrote it!

ADVENTURE

- ★ Over 200 places to explore in this machine code game using advanced data compression techniques.
- ★ No random elements—you will need skill, cunning and a sense of humour as you explore caves, forest and castles.
- ★ Evade ruthless pursuers and overcome a host of obstacles.
- ★ Multiple word commands and single letter abbreviations.

★★ Buy both Awari and Adventure and enter the 'Foilcade Challenge' competition. Details with cassette or send SAE.

FOILKADE LTD

£1000 IN PRIZES

K

BRIDGE

BY ALAN HIRON

DEALING WITH THE DOUBLE-DUMMY POSER

In my last article I talked about the possibilities of running an exhaustive search to tackle the play in the sort of bridge problem where 'you can see all four hands — the so-called — or rather misnamed — double-dummy problem.

As I had suggested, if the problem involves only five or six cards per player, then absolutely all the legitimate sequences of play can be inspected. As soon as you advance to larger numbers of cards (like thirteen per player?) then the computation becomes too massive for present day machines, even huge main-frames let alone a personal machine. And I am looking on the bright side!

The sort of problem that comes along in real life involves you as declarer — seeing only dummy. If asked how best to play the hand, an exhaustive search would involve creating and testing all possible ways of distributing the opponents' twenty-six cards between them!

It all sounds impossible complex, but there are simplifying routes to be considered. Suppose the computer is set a problem involving all 52 cards but where the target is to make all thirteen tricks.

It would be completely lunatic to explore all of the avenues of play which started with the declarer managing to lose the first trick.

It is the old story — if you want to look at all the possibilities the programming is easy — it just takes a few centuries to run.

How infuriating to have a power failure in 2342 AD when one of your descendants was nearly there! But perhaps it wouldn't worry you too much!

But a more sophisticated program, taking many times longer to write, should reduce the size of the calculation by several, indeed many, orders of magnitude.

Try this very simple example — a double squeeze in a three-card ending:

Perhaps your bridge memories don't go back as far as mine but in the late 1930's Ely Culbertson sponsored Auto-Bridge. In other words, bridge for one player.

The idea was neat and simple — you slipped one of a number of master charts into a flat container with a number of metal hatches on the top, you opened your thirteen hatches and saw your hand. You decided on a bid, you opened another hatch to see if you had made the right bid.

If you hadn't, you read the manual to see where you had gone wrong and made the right bid instead. Then you opened your left hand opponent's first bidding hatch, found out what he had done, looked at your partner's bid and then your right hand opponent's bid. Now your next decision — right, carry on; wrong, correct — and so on.

Then the play started after you had reached the approved contract. You opened the first card hatch on your left and saw the opening lead, inspected dummy — thirteen more hatches to open. You carried on, logically

enough, by deciding on your play to each trick before opening the appropriate hatch to see if you were right or wrong.

I suppose it might have been thought of as the Charles Babbage contribution to computerised bridge.

Now back to the 1980's. After the personal computer that plays bridge, came a logical step. If you have your own machine then for a relatively small sum you can buy a plug-in addition to your store — ROM, of course — that contains the raw material of a large number of hands, rather exciting colour graphics, sensible bidding for the hands and sensible play.

The plug-in board — produced by Intelligent Software for Tandy or compatible machines — doesn't play bridge — it just sees if you can, for it knows the hands and has been pre-programmed to cope with whatever you try.

The release date is December 1. More details when I have had a chance to play with the package more thoroughly.

S A 3
H K
D none
C none

S K J S Q 10
H A H none
D none D A
C none C none

S 2
H none
D K
C A

With South on lead and clubs as trumps it is easy for the human — play the Ace of Clubs.

If West discards HA you are home and dry. So West parts with SJ, dummy with the new useless HK and now East is squeezed.

Here it was relatively easy to look at all the possibilities as they were as few.

But as South required all the tricks, it would be time-wasting to examine all the sequences of play starting with a low spade from both South and North.

You see the point? Far more programming but less computation.

You can try to be too sophisticated. You remember the story of the chess computer that made a silly looking move, watched by and sneered at by many top-ranking human players?

Only later analysis proved that the machine was right in the sense that any alternative would have lost more quickly.

Who knows? Maybe exhaustive searches will still produce hitherto unknown and exciting plays on the bridge scene. Watch this space. Computer and Video Games hopes to bring you them first!



A

MACHINE CODE

LEARNING A NEW LANGUAGE . . .

We have already looked at some background material on binary numbers and the structure of a computer system. Although there will be more of this background material later on, this month we will be dealing with microprocessors and some, simple assembly language instructions.

To understand assembly language we need to look inside the microprocessor. Figures 1, 2 and 3 show the internal registers (memory locations and working storage) of the 6502, 6809, and Z80 processors.

Some registers hold an eight-bit binary number and others a 16-bit binary number, and all instructions use or operate on the contents of at least one register.

There are many differences between the three processors in the number, names and uses of the registers, but there are similarities among the main registers.

The Program Counter, PC, keeps track of the address of the instruction currently being executed, and is updated automatically every time an instruction is executed.

The Stack Pointer (S in the 6502 and 6809, SP in the Z80) is used to keep track of subroutine calls and returns.

Although these registers are very important in the operation of the processor, they can be ignored in elementary programming.

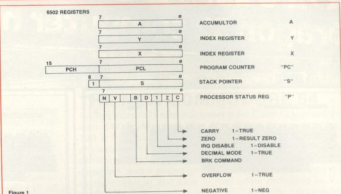
The most important registers to the programmer are the accumulator, A (or two very similar accumulators A and B in the 6809) and the flags (called P for Processor Status Register in the 6502, CC for Condition Code Register in the 6809, and F for Flags in the Z80).

The accumulator is used for performing arithmetic and logical operations, and although some of these operations can be carried out in other registers there are some operations which can only be carried out in an accumulator.

The flags record information about a binary number or about the result of a calculation, and are used in binary arithmetic and in conditional jumps (the equivalent of IF... THEN GOTO... IN Basic).

The other registers differ greatly between the three processors, and will be introduced slowly throughout this series.

The first instructions we are going to look at move data between the registers and the memory. You will remember



from last month that a memory location is selected by 16 address lines and can be specified by a 16-bit binary number (equivalent to a hexadecimal number from 0 to FFFF or a decimal number from 0 to 65535) and each memory location contains eight-bits of data (equivalent to a hexadecimal number from 0 to FF or a decimal number from 0 to 255).

Because the assembly languages are so different we will look at the processors individually.

THE 6502 AND MNEMONICS . . .

The 6502 uses the mnemonics LDA, LDX, LDY (LD being an abbreviation for load) in instructions that fetch data from memory into the registers A, X, Y, and STA, STX, STY (ST being an abbreviation for Store) in instructions that fetch data from the registers into memory.

As well as the opcode mnemonic we need an operand to indicate the memory location involved. The 6502 has several addressing modes, which are methods of specifying the memory location or register involved in an instruction, and we will begin by looking at two of these addressing modes, *immediate* and *absolute*.

In immediate addressing the actual data is included in the instruction, and a hash sign, #, is placed in front of the data to show that it is immediate data. Thus, we may write:

```
LDA #22
LDA #$16
LDX #$10
LDY #$10
```

The assembly language allows us to use several different notations for writing numbers. Two of these are shown in

the examples above; decimal numbers, which are written in the ordinary way with no distinguishing marks, and hexadecimal, which are distinguished by being preceded by the dollar sign, \$. Thus 22 and \$16 represent the same number.

Note that, because the registers A, X and Y contain eight-bits the operand in an immediate mode instruction must be an eight-bit number (0 to FF hex, or 0 to 255 decimal).

The result of these instructions is to replace whatever was in the register by the value specified in the instruction. Obviously, we cannot use immediate addressing with the store instructions STA, STX, STY, because there is nothing to tell us where to store the number.

In absolute addressing we specify a memory location. The load instructions the contents of the memory location into a register, and the store instructions put the contents of the register into the memory location.

The instruction LDA \$1000 takes the eight-bits from memory location 1000 hex and puts them into the accumulator, while STX \$1000 takes the eight-bits from register X and puts them into memory location 1000 hex. Note that we need four hex digits to specify an address.

There are also instructions to move data between the registers: TAX (Transfer contents of X to A), TXA (Transfer contents of A to X), TAY (Transfer contents of Y to A), and TYA (Transfer contents of A to Y).

In all these instructions only the destination (register or memory location) is changed; the source data remains the same. Thus, LDA \$1000 leaves the contents of memory location \$1000 unchanged, STX \$1000 leaves the contents of the X register unchanged, and TYA leaves the contents of the Y register unchanged.

BY TED BALL

GETTING FAMILIAR WITH THE 6809

The 6809 assembly language is very similar to the 6802 assembly language. We write decimal numbers in the usual way with no distinguishing mark, and precede hexadecimal numbers with a dollar sign.

We have the opcode mnemonics LDA, LDB, LDD, LDU, LDS, LDX, and LDY to load data from memory into the processor registers, and STA, STB, STD, STU, STS, STX and STY to store data from the processor registers into memory. The mnemonic must be followed by an operand to specify the memory location to be used.

Like the 6802, the 6809 has a number of *addressing modes* which allow the memory location or register involved in an instruction to be specified.

The simplest addressing modes are *immediate addressing* where the data is contained in the instruction, and *extended addressing*, where the memory location to be used is contained in the instruction.

Examples of immediate mode instructions are

```
LDA #22
LDB #16
LDD #1234
LDX #1000
```

The hash sign is used to indicate immediate addressing; decimal numbers are written with no distinguishing sign, and hexadecimal numbers are preceded by the \$ sign. Thus LDA #22 means "load the decimal number 22 into accumulator A", LDB #16 means "load the hexadecimal number 16 into accumulator B", and LDX #1000 means "load the hexadecimal number 1000 into register X".

The two accumulators, A and B, each contain eight-bits, so the operand must be an eight-bit binary number (equivalent from 0 to 255).

The 16-bit accumulator D is actually the two eight-bit accumulators combined, with A being the high order part and B being the low order part; the instruction LDD #1234 thus means "load the hexadecimal number 12 into accumulator A and load the hexadecimal number 34 into accumulator B".

The operand in a LDD instruction must always be a 16-bit number, and if we were to write LDD 1, the result of this instruction would be to put 0 in A and 1 in B. The registers U, S, X, Y, are 16 bits long and take a 16 bit immediate operand.



Some extended mode instructions are:

```
LDA $1000
LDD $1000
LDY $1000
```

LDA \$1000 takes the eight-bits from memory location 1000 hex and loads them into accumulator A. A 16-bit load instruction cannot, of course, take 16-bits from an eight-bit memory location, so it uses two consecutive eight-bit memory locations.

Thus LDY \$1000 loads the Y register with the contents of memory locations \$1000 and \$1001, the contents of location \$1000 becoming the high order part of Y and the contents of \$1001 becoming the low order part of Y.

Similarly, LDD \$1000 loads the contents of location \$1000 into A and the contents of \$1001 into B.

The store instructions in extended mode work in the opposite direction

from the corresponding load instructions.

Thus, STA \$1000 puts the eight-bits from accumulator A into memory location \$1000, STD \$1000 puts the eight-bits from A into memory location \$1000 and the eight bits from B into memory location \$1001, and STU \$1000 puts the 16-bits from U into memory locations \$1000 and \$1001.

We cannot use immediate addressing with store instructions, as this is meaningless.

As well as the load and store instructions, which move data between registers and memory we have the TFR and EXG instructions which move data between registers.

The operand with these instructions has the form r1, r2 where r1 and r2 may be any two registers of the same length.

Thus we can write TFR A, B which transfers the contents of A to B leaving

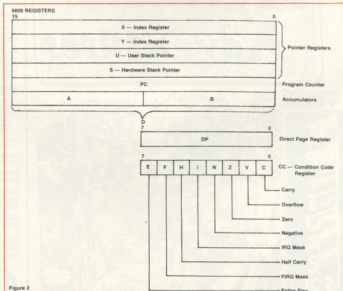


Figure 2



LEAP INTO THE COMPUTERISED AGE

VISIT OUR BRANCHES AT
ROCHFORD AND
HORNCURCH AND SEE THE
LARGEST SELECTION OF
HOME COMPUTER SOFTWARE
AND HARDWARE IN SOUTH
ESSEX



THE AMAZING ATARI COMPUTERS

NEW

LOW
PRICES

ATARI 800 16K
BASIC + MANUALS
£395.95

ATARI 800 48K
BASIC + MANUALS
£495.95

ATARI 400 16K
BASIC + MANUALS
£195.50

ATARI 400 48K
BASIC + MANUALS
£319.00

Learn Programming	£10.00
Introduction to Programming	£10.00
Introduction to Programming II	£10.00
Introduction to Programming III	£10.00
Page Master Graphics	£10.00
Page Master Graphics II	£10.00
Page Master Graphics III	£10.00
Page Master Graphics IV	£10.00
Page Master Graphics V	£10.00
Page Master Graphics VI	£10.00
Page Master Graphics VII	£10.00
Page Master Graphics VIII	£10.00
Page Master Graphics IX	£10.00
Page Master Graphics X	£10.00
Page Master Graphics XI	£10.00
Page Master Graphics XII	£10.00
Page Master Graphics XIII	£10.00
Page Master Graphics XIV	£10.00
Page Master Graphics XV	£10.00
Page Master Graphics XVI	£10.00
Page Master Graphics XVII	£10.00
Page Master Graphics XVIII	£10.00
Page Master Graphics XIX	£10.00
Page Master Graphics XX	£10.00

Adventure Games	£10.00
Adventure Games I	£10.00
Adventure Games II	£10.00
Adventure Games III	£10.00
Adventure Games IV	£10.00
Adventure Games V	£10.00
Adventure Games VI	£10.00
Adventure Games VII	£10.00
Adventure Games VIII	£10.00
Adventure Games IX	£10.00
Adventure Games X	£10.00
Adventure Games XI	£10.00
Adventure Games XII	£10.00
Adventure Games XIII	£10.00
Adventure Games XIV	£10.00
Adventure Games XV	£10.00
Adventure Games XVI	£10.00
Adventure Games XVII	£10.00
Adventure Games XVIII	£10.00
Adventure Games XIX	£10.00
Adventure Games XX	£10.00

Adventure Games	£10.00
Adventure Games I	£10.00
Adventure Games II	£10.00
Adventure Games III	£10.00
Adventure Games IV	£10.00
Adventure Games V	£10.00
Adventure Games VI	£10.00
Adventure Games VII	£10.00
Adventure Games VIII	£10.00
Adventure Games IX	£10.00
Adventure Games X	£10.00
Adventure Games XI	£10.00
Adventure Games XII	£10.00
Adventure Games XIII	£10.00
Adventure Games XIV	£10.00
Adventure Games XV	£10.00
Adventure Games XVI	£10.00
Adventure Games XVII	£10.00
Adventure Games XVIII	£10.00
Adventure Games XIX	£10.00
Adventure Games XX	£10.00

JOIN OUR SOFTWARE CLUB and save £5. Lifetime membership £20. Your membership fee includes your choice of software to value of £18. You will receive order by return with membership card and your own personal club no. PLUS 10% reduction on ALL future orders. We pay all postage and handling costs. For instant membership you may telephone your Access/Barclay/VISA card no.

Agents for Atari, Vic, Dragon, Rabbit, Romik, Bug Byte, Sharp, Texas, Kuma, Nascom, Micro Power, etc.

VIC 20
£139.95



Adventure	£10.00
Adventure I	£10.00
Adventure II	£10.00
Adventure III	£10.00
Adventure IV	£10.00
Adventure V	£10.00
Adventure VI	£10.00
Adventure VII	£10.00
Adventure VIII	£10.00
Adventure IX	£10.00
Adventure X	£10.00
Adventure XI	£10.00
Adventure XII	£10.00
Adventure XIII	£10.00
Adventure XIV	£10.00
Adventure XV	£10.00
Adventure XVI	£10.00
Adventure XVII	£10.00
Adventure XVIII	£10.00
Adventure XIX	£10.00
Adventure XX	£10.00



SPECTRUM COMPUTER GROUP MEMBER

(MAIL ORDER)
174 HIGH STREET,
HORNCURCH,
ESSEX, S4024 75613

17 GOLDEN CROSS PARADE,
(MANSTON GARDENS),
ASHINGDON ROAD,
ROCHFORD, 0782 548455



WE PROUDLY PRESENT, FOR THE VIC 20

THE INTERNATIONALLY SUCCESSFUL MYSTERIOUS ADVENTURES

These superbly written, Machine Code Adventures have been enjoyed by TRS80-VIDEO GENIE owners in Britain for well over a year now and are currently taking the U.S. by storm. The Author has now implemented these absorbing programs on the COMMODORE VIC 20 FITTED WITH 8K RAM PACK.

ALL ADVENTURES IN THIS SERIES INCLUDE:
Split screen display, Ultra fast Machine code response, Save game to cassette feature, Simple two word command entry, approx. 70 Locations to visit, 30 Objects to manipulate, 20 or more "problems" to overcome.

- ADVENTURES PRESENTLY AVAILABLE:
- 1) THE GOLDEN BATON — venture into a strange province of danger and evil magic to retrieve the stolen Ring of King Fernemul.
 - 2) THE TIME MACHINE — As a newspaper reporter you have been sent to the old house on the moors to investigate the eccentric Dr. Potter.
 - 3) ARROW OF DEATH (Part 1) — In the first part of this epic Adventure you must find and destroy the source of the evil blight which has befallen your homelands.

These are the first three of a series which could ultimately total more than 20 Adventures.

WARNING! — Only supreme courage and low cunning can ensure eventual success on these dangerous missions.

NOW AVAILABLE:
Escape from Pulstar 7
Arrow of Death Part 2

Circus
Feasibility Experiment

SEND CHEQUE OR P.O. FOR JUST £9.95 INC. VAT + 50p POST & PACKING TO:

Also available for BBC and Atari. Soon available for Commodore 64.
Memory expansion — phone for prices.
Dealer enquiries invited.



A unchanged, or TFR X, Y which transfers the contents of X to Y leaving X unchanged, but we cannot have TFR A, X because A is an eight-bit register and X is a 16 bit register.

Similarly, we can write EXG A, B which exchanges the contents of A and B, or EXG U, Y which exchanges the contents of U and Y, but not EXG A, U.

THE REGISTERS IN THE Z80

If you look at figure 3, showing the registers in the Z80 you will see that there are a total of 22 registers. We are not going to look at all these at once, but we will begin with the most important the accumulator A, and the registers B, C, D, E, H and L.

The instructions to move data from memory to registers, from registers to memory, and between registers all have the form LD destination, source.

There are several ways of specifying the destination and source, leading a number of different groups of LD instructions.

We can load data directly into a register by an instruction like LD A, 10 or LD H, 15H. Note that a decimal number is written in the normal way, while a

hexadecimal number must be followed by the letter H.

Thus, LD A, 10 loads the decimal number 10 into register A, and LD H, 15H loads the hexadecimal number 15 into register H.

We can load an eight-bit number (0 to FF hex or 0 to 255 decimal) into any of the registers A, B, C, D, E, H, L, in this way. We can also treat the register pairs BC, DE, HL as if each pair was a single 16-bit register, and write, for example, LD BC, 1000H. This loads the hex number 10 into B and the hex number 0 into C.

We can also load a register or register pair from data in memory. Thus, LD A, (1000H) loads the eight-bits from memory location 1000H into the accumulator A.

When we load a register pair from memory, we must, of course, use two memory locations. LD HL, (1000H) loads the contents of memory location 1000H into register L and the contents of memory location 1001H into register H.

Note that the high order part of the register pairs BC, DE, HL is B, D, H and the low order part is C, E, L, respectively, but when we load two memory locations into a register pair the order is reversed.

If we have 34H in memory location 1000H and 12H in memory location 1001H, the instruction LD BC, (1000H)

puts 34H in C and 12H in B, but the register pair BC will be treated as if it contained 1234H.

We can store data from registers into memory by instructions of the form LD (1000H), A or LD (1000H), BC. LD (1000H), A puts the eight-bit number from A into memory location 1000H, and LD (1000H), BC puts the 16-bit number from register pair BC into memory locations 1000H and 1001H, with the 8 bits from C going into location 1000H and the eight-bits from B going into location 1001H.

There is also a group of instructions of the form LD register 1, register 2 which move data between eight-bit registers; for example LD A, C moves the contents of C into A.

However, we cannot move data from one register pair into another register pair in a single instruction; if we wish to copy the data from BC into DE we must use two instructions, LD D, B and E, C.

A very important form of the LD instruction uses a register pair as a pointer to a memory location. For example, if HL contains 1000H (10H in H and 00H in L) the instruction LD A, (HL) puts the contents of memory location 1000H into the accumulator A, and the instruction LD (HL), A puts the contents of A into memory location 1000H.

Next month we will continue by looking at arithmetic instructions.

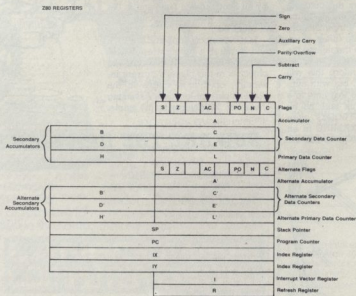


Figure 3

Adventure

PLOT OF THE GAME OF THE BOOK...

An adventure game is very similar to a story in that it must have a theme. The extent to which the game differs from a book is the degree of interaction with the plot.

This can vary from the player having no choice but to guess or deduce the correct commands, to allowing multiple choices of action at every turn.

In other words, the plot may branch endlessly. In a book, the outcome is fixed. In real life there is an infinite choice of actions, each with vastly differing results. An adventure game falls between these two extremes.

Perhaps this explains the popularity of Adventure, it is fiction in which the reader participates and affects the outcome.

Depending on the player's actions he can change the storyline to a certain extent.

A verb is the key to an action. We can look at all the different circumstances in which the verb may be uttered, and vary the outcome accordingly. The greater the number of different circumstances which can change the effect of using a particular verb the nearer the game will be to real life.

Of course, on a micro this will have a definite limit, but with cunning we can disguise that limit to a certain extent. Let us take as an example the word LOOK, often synonymous with EXAMINE in an adventure. LOOK AROUND has the

potential to produce a different reply for every location, and then some more, giving additional clues about hidden features, such as a secret exit, whilst LOOK HOLE may produce a reply like "I see a bottle of rum".

It may be arranged for the bottle to then be displayed as a normal visible object.

The outcome of the game will be affected, since it might be that without the rum a pirate will not be so helpful, and this might eventually be crucial to the game.

The program code to achieve these multiple replies can be relatively short:

```
3999 REM ***** LOOK (EXAMINE)
*****
4000 IF K2 <> (code for AROUND)
THEN 4500
4010 ON PN GOTO 4100,4110,
4120,4190 ... etc.
4100 LET Q1$ = "THERE'S A BOAT
ON THE HORIZON" : GOTO100
4110 LET Q1$ = "I SEE A SECRET
PASSAGE" : GOTO100
4120 ... etc.
4190 LET Q1$ = "I SEE NOTHING
SPECIAL" : GOTO100
```

This last line is the reply dreaded by all Scott Adams fans, and is the default line where no specific reply is required.

LOOK (object) implies EXAMINE and requires a different approach. First we must check whether the object is in the player's current inventory, or if it is visible in the player's current location. Assuming there are 30 objects in the game, then:

BEWARE THE RIGELIAN HOUND

Strange Odyssey is yet another of Scott Adams' offerings, and has a science fiction theme. The hardy adventurer finds himself in a broken down spaceship somewhere on the surface of the moon.

A good space traveller will of course know what precautions to take and how to use low gravity to advantage. A good adventurer will need similar insight!

Armed with a phaser it is quite likely that the explorer will come to an alien room and discover the way to travel to strange worlds. He might visit, for example, an intergalactic zoo and become the prey of a Rigelian dia-ice hound — not a beast to endear itself to any but the most devoted of dog-lovers!

```
4500 IF K2 > 30 THEN 4800 : REM
SUBSCRIPT IN RANGE FOR 4510
4510 IF P(K2) <> 50 AND P(K2) <>
LN THEN LET Q1$ = "I DON'T
SEE IT HERE" : GOTO 100
4520 ON K2 GOTO 4530,4190,
4540,4190,4550 ... etc.
4530 LET Q1$ = "IT SAYS: BEWARE
THE SLEEPING DRAGON" :
GOTO1000
4540 LET Q1$ = "THERE ARE 2
LEVERS — RED & GREEN" :
GOTO100
4550 ... etc
```

Note the use of the existing default line to avoid writing it twice. Line 4500 checks that K2 isn't greater than the highest permissible subscript set by the DIMension of the array P.

You can thus see that the limit to the different response to LOOK are set only by the computer memory available and the author's imagination!



Or he might get trapped in a methane snow storm and run out of oxygen. The object is to collect treasures of ancient alien civilisations and store them — where? Ah-ha! Can you get there? Can you mend your crippled ship? And can you climb slime trees?

This game, as might be expected from Scott, is not easy, but it is fun. It simulates many features from science fiction books and movies — if you are a science fiction fan you should find your way around easily enough!

Strange Odyssey is written in machine code, and versions are available for the TRS-80, Video Genie, Apple, Sorcerer and Atari computers. Thanks to Mr. Harding of Molimerx for the review copy.

BY KEITH CAMPBELL

NEW

SAVE IT!

Only

with **battpack**

(Patent applied for)

£13.95 + £1.40 p/p

PROTECT YOUR PROGRAMMES WITH THIS RECHARGEABLE BATTERY PACK

AT LAST! The answer to one of the major problems facing personal computer programmers and users: — **POOR MAINS SUPPLIES CAUSING HAVOC, WHILE YOU SPEND HOURS TRYING TO ENTER YOUR CAREFULLY PREPARED PROGRAMMES.**

Now Adaptors and Eliminators, who have produced nearly 70% of all ZX Mains Adaptors, bring you **BATTPACK** — a rechargeable 9v Ni-Cad battery pack and transient suppressor, housed in a complementary black ABS case that simply plugs into your ZX adaptor in seconds.

BATTPACK ensures the voltage into your ZX computer never drops below 9v, thereby eliminating the possibility of a programme crash because of a split second mains dropout! (One cycle is all it needs!)

BATTPACK also suppresses transients and RF using carefully selected capacitors. Your ZX Adaptor keeps the **BATTPACK** at full charge even when in use — so it's always ready for emergencies.

Even in the event of a full power cut **BATTPACK** will run your ZX computer for at least 30 minutes giving you time to save your programme on a cassette or print a hard copy on your ZX printer.

BATTPACK comes complete with all connecting leads and is ready for use.

ORDER NOW — SAVE NOT ONLY YOUR PROGRAMMES BUT ALSO YOUR TEMPER!!

MAIL ORDER ONLY. PLEASE ALLOW 28 DAYS FOR DELIVERY.

FOR ZX 81 AND SPECTRUM COMPUTERS

(AND OTHER MODELS USING 9v DC ADAPTORS)



ADAPTORS AND ELIMINATORS LTD 14 THAMES ST LOUTH Lincs.

PLEASE SUPPLY _____ (QTY) **battpack** /s

AT £13.95 each PLUS £1.40 p/p

I ENCLOSE CHEQUE POSTAL ORDER FOR £ _____

SIGNATURE _____

NAME _____

ADDRESS _____

The Name of the Game in the South!

SAVE
£100
ATARI 800 NOW
ONLY £399
INCLUDING
PROGRAMMERS
PACK



■ Lansdowne Computer Centre have one of the largest ranges of Software for the ATARI 400/800 in the South.

■ ATARI 400 (16k) from £199.

■ 32k and 48k upgrades available.

■ Choose from our extensive range including:

Santa Cruz, Adventure International, Data Soft, Infocom, On Line, Synapse, In Home Software, Automated Simulations.

Please rush me full details of your superb range of Software including mail order form.

Name: _____

Address: _____

Tel. No. _____

Tick Box:

☐ I am interested in details of the Atari 400/800 home computer range including accessories.

☐ I am interested in _____

make of computer. Please send me details.

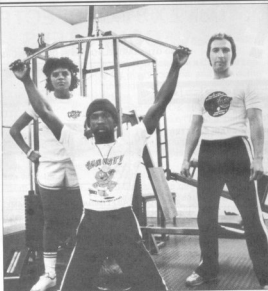
CVG1/83

ATARI

**LANDSLOWNE
COMPUTER CENTRE**

5 Holdenhurst Road, Bournemouth, Dorset.
Telephone: Bournemouth 20165
(Showroom located above
Stewart Greens The Chemist)

T-SHIRTS



Want to look tough? Well, when you wear a Computer and Video Games T-shirt no-one is going to kick sand in your face! There are three designs to choose from. One is discreet little number with the C&VG logo on the front in delicate shades of red and black. The Bugs feature large on our other two offerings. One features Snag Junior in glorious bright blue with the words "Watch out-there's a Bug about" writ large. Screaming Foul Up has managed to find his way onto our third shirt in brilliant yellow and green with the slogan "There's no polite word for something that bugs!"

The T-shirts come in four sizes, Extra Small, Small, medium and large, and cost £2.65 plus 30p for post and packing. Cheques and/or PO's (not cash) should be sent to: Computer and Video Games T-shirt Offer, 10-12 Victoria Road, Northampton.

COMPUTER & VIDEO GAMES T-SHIRT OFFER

Name

Address

Tel

Tick Size Reg. ☐ S ☐ M ☐ L ☐ Tick Design Reg. 1. "watch out" ☐ 2. "There's no polite word" ☐ 3. "logo" ☐

T-shirts cost £2.65 plus 30p p&p. Cheques/P.O.s payable to Computer & Video Games T-shirt offer.

OFFER APPLIES U.K. only.

Please return to: Computer & Video Games T-shirt offer, 10-12 Victoria Road, Northampton. PLEASE ALLOW UP TO 28 DAYS FOR DELIVERY.



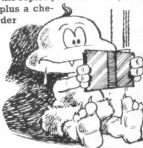
BACK ISSUES

Look what you've been missing! Games programs for your favourite machine, news and reviews of those games tapes you've always wanted to know about, plus special features on the latest trends in the exciting world of computers and gaming.

If you would like to catch up on what's been going on in the pages of Computer and Video Games over the past months why not send off for some back issues? It's easy to do.

Just send details of the copies you want with your name and address, plus a cheque or postal order

made payable to Computer & Video Games to C&VG Back Issues, Competition House, Fardon Rd., Market Harborough, Leicestershire. Each issue costs £1 including post and packing.



EASIBINDERS

Quick, neat and easy!

It's so easy and tidy with the Easi-bind binder to file your copies away. Each binder is designed to hold 12 issues and is attractively bound and blocked with the COMPUTER & VIDEO GAMES logo. Price U.K. £4.25 including postage, packing and V.A.T. Overseas orders add 25p per binder.

Nat. Giro No. 5157552.

Please allow 3/4 weeks for fulfilment of order. Payment by ACCESS/BARCLAYCARD/VISA. Send coupon below detailing credit card no. and signature. Why not place your order now? Send the completed coupon below with remittance payable to:-

Easibind Ltd., 4 Uxbridge St., London, W8 7SZ.



Order Form COMPUTER & VIDEO GAMES

I enclose P.O. cheque value for binders
Years required BLOCK LETTERS PLEASE

Name

Address

Date Registration No. 307469

SINCLAIR ZX Spectrum

GROUND FORCE ZERO

Just **£5** inclusive

The Ground Force team have descended on the air attack with their own version of the classic Ground Force and it's now a ZX Spectrum game.

WIZARD

MISSILE MAN

Just **£6** inclusive

TRAPPED IN THE MOUTH OF DEATH THE VORACIOUS MISSILE MAN IS ON YOUR FINEST TARGETS! NO MORE! A BOMB, MISSILE, ARROW, LASER, OR ANY OTHER WEAPON WILL DESTROY HIM! THE VORACIOUS MISSILE MAN!

MAY THE FORCE OF TITAN BE WITH YOU

ATARI 400/800 16K

CAVERNS

Just **£6** inclusive

JOURNEY THROUGH ROCK CAVERNS, FAST LASER FIGHTS THROUGH ROCK VALLEY AND INTO THE UNKNOWN.

TEXAS INSTRUMENTS

MISSION 88

Just **£6** inclusive

THREE TERRORS IN THE STREET? WASHINGTON IS YOUR STRONGHOLD. YOU'VE GOT THE ENEMY, DON'T MISS IT! THE ENEMY IS YOUR STRONGHOLD. YOU'VE GOT THE ENEMY, DON'T MISS IT!

TITAN PROGRAMS



TITAN HOUSE, 83 ASHWOOD ROAD, RUDLOE, CORSHAM, WILTSHIRE SN13 0LG

IMMEDIATE DELIVERY

Please send me:
 I enclose cheque/P.O. for
 OR Please debit my Access No.
 Barclaycard No. Expiry date
 Name
 Address
 Post Code

Dealers Discount Available
 ACCESS, BARCLAYCARD ORDERS WELCOME: ON 24hr
 ANSWERPHONE 0225-810132, or mail to:
 TITAN PROGRAMS, TITAN HOUSE,
 83 ASHWOOD RD., RUDLOE, CORSHAM,
 WILTSHIRE, SN13 0LG

PLYMOUTH COMPUTERS 83 Exeter Street, Plymouth, Devon. (0752) 23042

GAMES FOR SHARP MZ80A/K and B

- OIL STRIKE. Try and become an oil tycoon. A, B & K.
- SPACE MISSION. A & K. Destroy aliens.
- SQUASH. A & K. Real time. 3 levels.
- MARAUDERS. A & K. Learn to survive.
- NUMBER ADVANCE. A & K. Addictive!
- AIR BOMBER. A & K. 4 Levels of play.
- CODE BREAKER. A & K. 7 skill levels — deduction.
- FOOTBALL LEAGUE. A, B & K. 4 English divisions.
- ADDRESS/TEL BOOK. A, B & K. 200 records.
- MUNCHIE MEN. A & K. The answer to Pacman.

EPSON MX80 FT III £356.50 inc. VAT + Carr

EPSON MX80 Dustcover £4.90

DRAGON 32 Dustcover £4.90

MZ80A £6.90 Dustcover

DRAGON 32 Cassette Leads £2.50

DRAGON 32 £199.90

ALL GAMES £4.99 each. Inc VAT & P+P.

All prices inc. VAT and Delivery
 ACCESS/INSTR:AMEX/VISA

New Generation Software

Professionally Written and Produced
 Software for the Home Computer

From M.E. Evans the author of the highly acclaimed **3D MONSTER MAZE** and **3D DEFENDER** for the ZX81 comes **TWO GAMES FOR THE SPECTRUM**

3D TUNNEL (16K & 48K versions on one tape)
 What lies down in the depths of the TUNNEL? Flying bats, leaping spiders, and rats? Maybe. Perhaps more! You will have to avoid the walls of the TUNNEL as it weaves up and down and side to side to find out. All in 3D of course.
 (*not in 16K version).

ESCAPE (runs in 16K)
 Can you ESCAPE from the maze inhabited by 5 hunting Crossovers, including a Piranodon that roams over the maze to swoop down on you.
 "One of the best and most original games we have seen for the SPECTRUM so far" SINC-LAIR USER.

Available mid-Jan.

Trade enquiries welcome at address below

Send to: **NEW GENERATION SOFTWARE, FREEPOST (BS3433), Oldland Common, BRISTOL BS15 6BR** (no stamp req'd. in UK) or for **INSTANT CREDIT CARD** sales ring 01-930 9232. S.a.o. with enquiries please.

Please send me of **3D TUNNEL**/ of **ESCAPE**, at **£4.95** each (inc p&p and VAT). I enclose cheque/P.O.

Mr/Mrs/Miss

Address

Post Code **CVG**





ORIC-1TM

TIMELESS TECHNOLOGY FROM ORIC PRODUCTS INTERNATIONAL

16 colours
professional keyboard
full graphics
real sound

- COMING SOON, TO COMPLETE YOUR SYSTEM: ORIC MICRO-DRIVE DISCS & SPEED PRINTER

£ **99** .95
incl VAT

© Copyright ORIC PRODUCTS INTERNATIONAL 1982

ORIC-1

se, with Hi-Fi
dem will

any

ORIC-1

The Real Computer System

INTERNATIONAL LTD

Qty	Price	Inv. Vnt	Total
2	98.55	1565.55	79.00
			TOTAL

...ing.
...es more
...ing,

System

Crowth Park Manager, Crowth Park
 10000 Highway 11, Ascot, Berks SL5 7SP

*Please delete/complete
 as applicable.
 I enclose a cheque/
 payable to: _____
 PRODUCT _____
 INSTRUCTIONS _____

Total _____
 P.O. Box 100
 ORCA PAPER
 INTERNATIONAL
 LIMITED
 for \$ _____

35

TOTAL £ 79.00

100

Require a brochure
Please tick ☐

CV

Warpath is set in a Wild West scenario. A group of troopers are making their way through Indian country to relieve a beleaguered garrison. They win if their flag is carried successfully to the gates. The Indians, on the other hand, are intent on removing the garrison from their territory. They win by capturing either the garrison's headquarters or the flag.

Whilst the troopers have the greater firepower, this is matched by the increased mobility of the Indians so that the game is fairly evenly balanced. It is a relatively simple wargame. The rules, by modern wargame standards, are not complex but despite this it can produce interesting situations.

This is your chance to change history and be remembered as the hero that saved Fort Cheraqick! Or perhaps you would prefer to be known as the Indian Chief that saved the West and kept his tribe out of the reservations.

In this series of articles I am going to explain some of the techniques used to develop my wargames using Warpath as a typical example. Although it was written for the TRS-80 Level II, it is intended to provide sufficient detail to enable it to be modified for any computer. As we progress we will introduce the rules of play and list further routines until we have a complete wargame. As well as taking part in an interesting project, it is hoped you will find the ideas helpful in your own programming.

First, an explanation is necessary. Warpath contains 174 lines in multiples of 10 (i.e. from 10 to 1740). To avoid any subsequent confusion, every line will be printed exactly as it appears in the program. This will mean that occasionally lines will include references to subroutines which, if they are not relevant to the current article, are not listed. To ensure that the program runs properly without them, I have simply



WARPATH

More than just a wargame. Ron Potkin's series develops into a thrilling wild west conflict but also teaches some advanced programming techniques.

added a RETURN at the appropriate line with the remark, "STUB". See lines 860 and 950 for examples. These will eventually be filled out and completed.

For those of you who are unfamiliar with wargames, let me first describe the hex. Most games are played on a board divided into squares so that pieces may move in four or, if you include diagonals, eight directions. But squares are a problem in wargames because a piece moving diagonally will, in fact, move further than a piece moving, say, North or West.

This difficulty has been overcome by dividing a map into regular hexagons, or "hex" for short (see figure 1). Whilst the number of possible directions is

reduced to six, you will see that all distances are equal. I have adopted the hex as standard in all my wargames with the exception of Turret and Track, which uses squares.

We are going to start by describing Bigscreen and Window. These are the basic elements of the program and were designed so that several wargames could be devised (*Kriegspiel II* and *Up Periscope!* use the same module). Instead of an area of 120 hex which fills the video screen, the map is held in a separate part of memory and only the relevant section appears on the screen. This large map is called Bigscreen and contains 31 rows of 128 print locations. The video is regarded as a Window

looking over a portion of the map.

Bigscreen is an array of 3968 bytes and can hold a map of 496 hex (see figure 2). The numbers represent the first print position for the pieces. Figure 3 shows the layout of the Window. It starts at the print location 132 and consists of 11 rows of 56 bytes leaving room for messages and the map co-ordinates. It displays at any time an exact image of a portion of the map.

You should examine both arrays carefully and, in particular, note the way that the hex are laid out. We will discuss them in more detail later when we look at the movement of pieces. In a program of this nature many of the routines are concerned with searching the hex.





ALLRIAN DATA SERVICES
1000a, Uxbridge Rd, Hayes, Middx.
UKA 0181

Hazard Run cass 21.50 disk 24.95
16k - all machine code - drive cross country and make the final jump - real high-res action!

Golden Gloves cass 20.50 disk 23.95
24k - all graphics action boxing challenge - for 1 or 2 players.

Pilot cass 15.50 disk 18.95
16k - real time - you are in the cockpit of a light aircraft - now land it!

Drawpic cass 24.50 disk 27.95
16k - utility - access ATARI graphics with ease - a must for any programmer.



Manufactured in the UK for
Artworx

CREATIVE SOFTWARE CREATIVE SOFTWARE CREATIVE SOFTWARE **creative ATARI 400/800 software SOFTWARE**

48 Hartlip Hill, Newington, Sittingbourne, Kent ME9 7NZ.



RAJA BUGGIES (16k.C) £22.95 — Test your desert driving skills
ASTRO CHASE (32k.C/D) £20.95 — Arcade Action at its best
GORP (32k.D) £25.95 — No need to play it in the Arcades
CHOPFLIFTER (48k.D) £21.95 — A 3-D helicopter rescue arcade game
BANDITS (48k.D) £22.95 — The ultimate experience for Arcade Action
PICTIC PARANZIA (32k.C) £23.95 — An Arcade game with a difference
PROTECTOR II (32k.C/D) £23.95 — Superior version of original Protector
= OTHER TITLES

Software expected to be available by the time of publication

PREPPIE (16k.C)	£16.95	REAR GUARD (16k.C)	£15.75
GHOST HUNTER (16k.C)	£18.45	ALIEN GARDEN (16k.R)	£24.95
CRYPT OF THE UNDEAD (40k.D)	£19.95	TRACK ATTACK (32k.D)	£19.50
STELLAR SHUTTLE (16k.C)	£19.50	BUS ATTACK (16k.C/32k.D)	£19.50
CANYON CLIMBER (16k.C) (16k.D)	£18.95	SHOOTING ARCADE (16k.C/D)	£18.95
PACIFIC COAST HIGHWAY (16k.C/D)	£18.95	CLOWNS & BALLOONS (16k.C/D)	£18.95
TUMBLERBUGS (24k.D)	£18.95	ANDROMEDA (24k.D)	£25.95
PATFINDER (32k.D)	£22.50	AIRSTRIFE (16k.C/32k.D)	£18.95
VENUS VOYAGER (16k.C/32k.D)	£18.95	TIME WARP (16k.C/32k.D)	£18.95
GHOST ENCOUNTERS (16k.C/D)	£18.95	WIZARD OF WOE (16k.D)	£24.95
FROGGER (16k.C/32k.D)	£21.95	THRESHOLD (16k.D)	£25.95
JAWBREAKER (16k.C/D)	£18.50	MOUSKATTACK (32k.D)	£25.95
DE LUXE INVADERS (16k.D)	£21.95	ANTI SUB PATROL (16k.D)	£18.95
SHAKE IT!! (48k.D)	£18.95	CYCLOD (48k.D)	£18.95
SPACE EGGS (48k.D)	£18.95	INEAKERS (48k.D)	£18.95
CHICKEN (16k.C/D)	£23.95	SLIME (34k.C/D)	£23.95
GLAND JUMPER (16k.C)	£23.95	SHARKS (24k.C/D)	£23.95

SPECIAL OFFER: FREE BLANK DISKETTE WITH ANY TWO DISK GAMES ORDERED (OFFER ENDS JAN 31)

UTILITIES ETC.		MICRO PAINTER (48k.D)	£22.95
S.A.H. SYNTHESIZER (16k.D)	£37.95	K-DOGS (32k.D)	£47.50
GRAPHIC MASTER (48k.D)	£27.95	SACRA CRUIZ TUTORIALS (16k.C)	£12.95
LE STICK	£29.95	VOICE BOX	£99.95

COLOUR SOFTWARE CATALOGUE AVAILABLE — £1.00 (Deductible from first order)

FOR FULL LIST OF AVAILABLE SOFTWARE, PLEASE SEND STAMP.

**HAPPY XMAS
TO ALL OUR CUSTOMERS**

Please allow 28 days for delivery. Postage etc: 45p per item.

latest computing trends
innovations
applications
software
courses
resources
reports
surveys
reader's views
editorial analysis
book reviews
workshop ideas

= **Educational Computing**

Add it all up and what have you got?
The **only** publication with comprehensive coverage of the educational computing scene. So whatever your responsibility in this field

Educational Computing should be at the top of your 'essential reading' list.

To be informed... be sure

Don't simply hope you'll discover a well-thumbed copy of **Educational Computing** in your library or staff room. Subscribe today and receive your own personal copy **10 times** a year.

Educational Computing: The best publication in its field... by a long chalk.

Post the coupon below to: Educational Computing, MA25UB (Subscription Services) Ltd, Oakfield House, Perrymount Road, Haywards Heath, West Sussex RH16 3HD. Please send subscription payments only to this address. Subscription enquiries: Contact Veronica Harris on 04444 459188.

Please start me a subscription to Educational Computing and continue to send it to me until I cancel. I understand that I may stop my subscription at any time and you will refund me the balance.

I enclose a cheque for £10 (£22 overseas). Ten issues a year. Cheques should be made payable to Educational Computing.

Name _____ Position _____

Establishment _____

Address _____

Signed _____

Date _____

Right now we have to try and relate the Bigscreen positions to the Window. If a piece is at location ML on Bigscreen, how do we decide what part of the map should appear in the Window? In the wargame, it is desirable that the current piece being moved be in the centre of the Window so that it can "see" in all directions.

An algorithm is needed which, given ML—the location on the Bigscreen, will calculate: N7—the address of the top-left corner of the selected rectangle, and SP—the position at which the piece will appear on the screen. Unless the piece is near the edge of the map, SP will be 476.

The following routine will perform these calculations:

```
Z=128:R=MLAND127:Q=INT(ML/128)
IFR<28:THENSP=132+R:N7=OEISELFR
>96:THENSP=60+R:N7=72ELSELSP=156:
N7=R-24
IFQ<6:THENSP=SP+64*Q:RETURNELSP
SP=SP+320
IFQ>24:THENSP=SP+64*(Q-25):N7
=N7+2560:RETURNELSEN7=N7+Z*
(Q-5):RETURN
```

Looks complicated, doesn't it? Try it. Type the lines in, INPUT various values for ML and PRINT out the values SP and



N7. Most of the routine is spent checking to see if the piece is near the edge.

Once we have made the calculation, the correct part of the map is transferred to the Window and after we have carried out the player's move, the updated image is transferred back to the map. It is, of course, very important that we do not disturb ML during this process.

Unfortunately, transferring the map to the Window or copying the Window back to the map is very slow in Basic and so we must use machine language to perform these functions. Never used this before? Well, don't worry; I am going to make it as straightforward as I can so that you can't go wrong.

Strings are used in the program to save memory. Compared with DATA statements and other methods of using machine language in Basic programs, strings are very efficient in terms of convenience, time and space. In general, an 80% saving is realistic—you can see this by comparing the length of lines 3000 to 3021 with the length of lines 1540 to 1560 which will eventually contain the DATA. However, strings do have disadvantages: the lines containing them cannot be edited or listed and neither 34 nor zero should be used since these have special meanings to the Basic editor.

In the Basic listing that follows we shall use DATA to create a string of machine language and then delete it from the program. For those of you that want to understand the machine language contained in the DATA, a section of the coding which performs the algorithm above is shown in figure 4. You can see that the second column matches the DATA statements.

The program contains a loader which converts the code held in DATA statements to strings and a driver to demonstrate the Bigscreen routine. It is important to fill XS(1) with exactly 232 characters, XS(2) with 33 and XS(3) with 57. You will find that the editor will refuse to accept line 1540 in one shot (the limit is 240 characters including the line number), so type as much as you can and then enter the EDIT mode and press X. You will be able to add the additional characters at the end. Finally, make sure you save the program.

When you run it, there will be a pause while the strings are created. The program will stop if it discovers errors in the DATA lines. XS(3) is used to clear the Bigscreen by loading each byte with 128. Do not use the space (or 32) if you intend using graphics since you cannot manipulate the pixels. XS(1) is used to get the appropriate rectangle, a character is printed in the Window and then XS(1) is used again to put it back.

Finally, the Bigscreen with its contents and co-ordinates is scrolled across the Window. Press ENTER to stop the scrolling.

All lines up to 1740 which are multiples of 10 are extracts from the wargame. Eventually, all other lines can be deleted but we will keep them until all the strings are complete. Finally, here

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
11	8	8	16	24	32	40	48	56	64	72	80	88	96	104	112	120	128	136	144	152	160	168	176	184	192	200	208	216	224	232	240
21	256	264	272	280	288	296	304	312	320	328	336	344	352	360	368	376	384	392	400	408	416	424	432	440	448	456	464	472	480	488	496
31	512	520	528	536	544	552	560	568	576	584	592	600	608	616	624	632	640	648	656	664	672	680	688	696	704	712	720	728	736	744	752
41	768	776	784	792	800	808	816	824	832	840	848	856	864	872	880	888	896	904	912	920	928	936	944	952	960	968	976	984	992	1000	1008
51	1024	1032	1040	1048	1056	1064	1072	1080	1088	1096	1104	1112	1120	1128	1136	1144	1152	1160	1168	1176	1184	1192	1200	1208	1216	1224	1232	1240	1248	1256	1264
61	1280	1288	1296	1304	1312	1320	1328	1336	1344	1352	1360	1368	1376	1384	1392	1400	1408	1416	1424	1432	1440	1448	1456	1464	1472	1480	1488	1496	1504	1512	1520
71	1536	1544	1552	1560	1568	1576	1584	1592	1600	1608	1616	1624	1632	1640	1648	1656	1664	1672	1680	1688	1696	1704	1712	1720	1728	1736	1744	1752	1760	1768	1776
81	1784	1792	1800	1808	1816	1824	1832	1840	1848	1856	1864	1872	1880	1888	1896	1904	1912	1920	1928	1936	1944	1952	1960	1968	1976	1984	1992	2000	2008	2016	2024
91	2032	2040	2048	2056	2064	2072	2080	2088	2096	2104	2112	2120	2128	2136	2144	2152	2160	2168	2176	2184	2192	2200	2208	2216	2224	2232	2240	2248	2256	2264	2272
101	2288	2296	2304	2312	2320	2328	2336	2344	2352	2360	2368	2376	2384	2392	2400	2408	2416	2424	2432	2440	2448	2456	2464	2472	2480	2488	2496	2504	2512	2520	2528
111	2560	2568	2576	2584	2592	2600	2608	2616	2624	2632	2640	2648	2656	2664	2672	2680	2688	2696	2704	2712	2720	2728	2736	2744	2752	2760	2768	2776	2784	2792	2800
121	2816	2824	2832	2840	2848	2856	2864	2872	2880	2888	2896	2904	2912	2920	2928	2936	2944	2952	2960	2968	2976	2984	2992	3000	3008	3016	3024	3032	3040	3048	3056
131	3072	3080	3088	3096	3104	3112	3120	3128	3136	3144	3152	3160	3168	3176	3184	3192	3200	3208	3216	3224	3232	3240	3248	3256	3264	3272	3280	3288	3296	3304	3312
141	3328	3336	3344	3352	3360	3368	3376	3384	3392	3400	3408	3416	3424	3432	3440	3448	3456	3464	3472	3480	3488	3496	3504	3512	3520	3528	3536	3544	3552	3560	3568
151	3584	3592	3600	3608	3616	3624	3632	3640	3648	3656	3664	3672	3680	3688	3696	3704	3712	3720	3728	3736	3744	3752	3760	3768	3776	3784	3792	3800	3808	3816	3824
161	3840	3848	3856	3864	3872	3880	3888	3896	3904	3912	3920	3928	3936	3944	3952	3960	3968	3976	3984	3992	4000	4008	4016	4024	4032	4040	4048	4056	4064	4072	4080

Figure 2

	132	140	148	156	164	172	180
132	280	288	216	224	232	240	248
260	268	276	284	292	300	308	316
388	328	336	344	352	360	368	376
	456	464	472	480	488	496	504
516	584	592	600	608	616	624	632
644	652	660	668	676	684	692	700
	712	720	728	736	744	752	760
772	780	788	796	804	812	820	

Figure 3

MERSEYSIDE'S BIGGEST SOFTWARE STOCKIST

Microspot

ATARI 400 16K £199.99

ATARI 400 48K £279.99

ATARI 800 16K £399.99

DRAGON 32 £199.00

KEYBOARD FOR ATARI 400 £79.99

ATARI SOFTWARE... OVER 200 IN STOCK INCLUDING Bandits, Choplifter, Venus Voyager, Picnic Paranoia, Claim Jumper. Call for latest software.

VIC 20 SOFTWARE... Mind Twisters, Martian Raider, Space Storm, Skramble, Space Phreeks, Night Crawler.

BUG BYTE SOFTWARE — Call for latest.

DRAGON 32... Escape, Slipper, Defence Programs, Packs 1, 2 & 3, Scarfman, Planet Invasion, Light Pen, Alcatraz, Space Monopoly, Mansion Adventure, Jerusalem Adventure. Ring for latest.

MICROSPOT

15 Moorfield
Liverpool CL2 2BQ
Tel: 051-236 6628

ATARI VCS CARTRIDGES from PANCOM

The largest selection in the UK... at lowest prices

New releases

Atari	17.95	Parker Bros	27.95
Demore to Diamonds	29.95	Empire Strikes Back	27.95
Star Raiders		Frogger	
(inc push button keyboard)			
Adventure	21.95	Data Age	21.95
Atari	21.95	Encounter at L5	21.95
Megamania		Antic	21.95
		Bugs	21.95
Acrobat	21.95	SSSnake	21.95
First Approach	21.95		
Wabbit	21.95	10th Century Fox	
		Warrior	26.95
Tiny Toad	23.95	Beany Bopper	26.95
Thrukill	23.95	Fast Eddie	26.95
Jawbreaker	23.95	Deadly Duck	23.95
		Turmoil	26.95
Spectravision	21.95	Alien	26.95
Hangover Alley	21.95		
Planet Patrol	24.95	Crucio	27.95
Nascar	24.95	Drumy Kong	27.95
Cross Force	24.95	Venture	27.95
Capewar	24.95	Mouse Trap	27.95
Chia Syndrome	24.95	Carnival	27.95

Atari Specials

Steel Racer	17.95	Circus	15.95
Super Breakout	26.95	Star Racer	16.95
Warlords	20.95	Space War	12.95
Pole Slicer	20.95	Adventure	26.95
Superman	20.95		

Recent releases

Atari	26.95	Adventure	21.95
Defender	24.95	Chopper Command	21.95
Berzerk	24.95	Star Master	21.95
Yars Revenge	24.50	Ice Hockey	21.95
Pac Man	27.95	Grand Prix	21.95
Haunted House	17.95	Stampede	16.95
		Hammering	21.95
Atari	21.95	Yoda	
Control Ark	21.95	Space Jockey	21.95
Atari	21.95		
Fire Fighter	18.95	Tiger	23.95
Riddle of the Sphinx	21.95	Atari	
Demon Attack	21.95	Acrobat	21.95
Truck Shot	18.95	Space Chase	21.95
Star Voyager	21.95	Space Cavern	21.95

Coming soon: Parker Bros: Amidar, Super Cobra, Reactor, Spider Man. Spectravision: Master Builder, Galactic Tactics, Mangia. Tigervision: River Patrol, Marauder. Atari: Raiders of the Lost Ark, Coleco: Turbo.

Postage etc: 50p per item. Two or more items Post Free. Send SAE for lists. Pancom: Mail Order & Enquiries: 6 Tranby Drive, Grimsby, S. Humbs. Telephone: (0472) 694196. Retail Shop: 87-89 Pasture Street, Grimsby.



MAKE YOUR CONTRIBUTION TO SPECIAL EDUCATION MORE EFFECTIVE

Robyn Frankham copes very well with her learning problems, thanks to developments with computers in special education. Like many other children, she now has the ability to communicate with the aid of microelectronic devices which help her to write essays, draw pictures and most important of all, to gain her independence.

Learning To Cope '83 — Computers in Special Education, is the second of this annual publication which presents the story of Robyn and how many other physically and mentally handicapped children and adults are coping with their futures. Tremendous progress is being made through the manufacture of specialised devices and through the dedication of teachers and parents.

Learning To Cope '83 looks at specialised computer hardware and software and brings you the latest developments in applications covering all aspects of special education. Read for yourself how committed people have developed and redesigned new and existing equipment to help those in special education help themselves.

We can all help if we care enough.

Learning To Cope '83 — Computers in Special Education £2

Please send me a copy of Learning To Cope '83 — Computers in Special Education.

I enclose a cheque (total order made payable to Educational Computing for £2 including p.p.s.)

Name: _____

Postcode: _____

Day/night: _____

Address: _____

Signed: _____

Now please post to: Learning To Cope '83, 8 North Hill, London EC1R 1BB.

are a few notes on some of the lines in the program:

Line 10 — Why do I perform this GOTO 760? I have learnt that it is a good idea to put my subroutines near the beginning of the program. There are two reasons for this.

● The interpreter searches for line numbers from the beginning of the program and so it is marginally faster. I experimented with this in a program on the ZX81 and found that I could save several seconds by moving a subroutine from line 9000 to line 20.

● It saves space. GOSUB50000 costs 6 bytes but GOSUB50 only costs 3. You will discover that I am a byte-miser and will try anything if I can save a few bytes as a result. You can see therefore that by jumping to line 760, I leave room for subroutines.

Line 190 — POKES U and U+1 with the value of P which must be between 0 and 32767. POKE is a marvellous instruction to try out on a friend, but wait until he has typed out a long program without a single SAVE!

Line 390 — O is the GET/PUT flag. If O=1 copy BIGSCREEN to WINDOW; if O=0 copy WINDOW to BIGSCREEN. Don't forget that although USR will



WARPATH

to be continued
next month

accept only one argument up to 32767, you can use compound arguments. In this case, I want to pass the variables ML and O. Since ML ranges from 0 to 3968 in steps of 8, I am able to use Bit 0 as the GET/PUT flag.

Line 440 — Obtain the address of the string in XS(V). If your computer has VARPTR then rejoice! It's missing on the ZX81 which makes using machine language somewhat cumbersome.

Line 760 — Sets MEMORY SIZE. You must use CLEAR before and after GOSUB 190. This method avoids having to remember the size each time the program is run. Many types of Basic already have this built in.

Line 1110 — The machine language routines often call other routines. This would involve POKING new addresses each time the program is run and could cause problems with 34 and zero. Instead, a fixed jump table is used (see variable RU) and its address coded into the routines.

Once you understand the principles, experiment with the routine. Remember that ML must always be an even number otherwise it will upset the GET/PUT flag. Next month I shall continue with the Internal Board and the Piece Table which looks at the make-up of the cavalry garrison and indian tribe.

FIGURE 4

```

0001 ;
0002 ;
0003 ; CALCULATE N7 AND SP
0004 ;
0005 ;
0006 ;
0007 ;
0008 ;
0009 ;
0010 ;
0011 ;
0012 ;
0013 ;
0014 ;
0015 ;
0016 ;
0017 ;
0018 ;
0019 ;
0020 ;
0021 ;
0022 ;
0023 ;
0024 ;
0025 ;
0026 ;
0027 ;
0028 ;
0029 ;
0030 ;
0031 ;
0032 ;
0033 ;
0034 ;
0035 ;
0036 ;
0037 ;
0038 ;
0039 ;
0040 ;
0041 ;
0042 ;
0043 ;
0044 ;
0045 ;
0046 ;
0047 ;
0048 ;
0049 ;
0050 ;
0051 ;
0052 ;
0053 ;
0054 ;
0055 ;
0056 ;
0057 ;
0058 ;
0059 ;
0060 ;
0061 ;
0062 ;
0063 ;
0064 ;
0065 ;
0066 ;
0067 ;
0068 ;
0069 ;
0070 ;
0071 ;
0072 ;
0073 ;
0074 ;
0075 ;
0076 ;
0077 ;
0078 ;
0079 ;
0080 ;
0081 ;
0082 ;
0083 ;
0084 ;
0085 ;
0086 ;
0087 ;
0088 ;
0089 ;
0090 ;
0091 ;
0092 ;
0093 ;
0094 ;
0095 ;
0096 ;
0097 ;
0098 ;
0099 ;
0100 ;
0101 ;
0102 ;
0103 ;
0104 ;
0105 ;
0106 ;
0107 ;
0108 ;
0109 ;
0110 ;
0111 ;
0112 ;
0113 ;
0114 ;
0115 ;
0116 ;
0117 ;
0118 ;
0119 ;
0120 ;
0121 ;
0122 ;
0123 ;
0124 ;
0125 ;
0126 ;
0127 ;
0128 ;
0129 ;
0130 ;
0131 ;
0132 ;
0133 ;
0134 ;
0135 ;
0136 ;
0137 ;
0138 ;
0139 ;
0140 ;
0141 ;
0142 ;
0143 ;
0144 ;
0145 ;
0146 ;
0147 ;
0148 ;
0149 ;
0150 ;
0151 ;
0152 ;
0153 ;
0154 ;
0155 ;
0156 ;
0157 ;
0158 ;
0159 ;
0160 ;
0161 ;
0162 ;
0163 ;
0164 ;
0165 ;
0166 ;
0167 ;
0168 ;
0169 ;
0170 ;
0171 ;
0172 ;
0173 ;
0174 ;
0175 ;
0176 ;
0177 ;
0178 ;
0179 ;
0180 ;
0181 ;
0182 ;
0183 ;
0184 ;
0185 ;
0186 ;
0187 ;
0188 ;
0189 ;
0190 ;
0191 ;
0192 ;
0193 ;
0194 ;
0195 ;
0196 ;
0197 ;
0198 ;
0199 ;
0200 ;
0201 ;
0202 ;
0203 ;
0204 ;
0205 ;
0206 ;
0207 ;
0208 ;
0209 ;
0210 ;
0211 ;
0212 ;
0213 ;
0214 ;
0215 ;
0216 ;
0217 ;
0218 ;
0219 ;
0220 ;
0221 ;
0222 ;
0223 ;
0224 ;
0225 ;
0226 ;
0227 ;
0228 ;
0229 ;
0230 ;
0231 ;
0232 ;
0233 ;
0234 ;
0235 ;
0236 ;
0237 ;
0238 ;
0239 ;
0240 ;
0241 ;
0242 ;
0243 ;
0244 ;
0245 ;
0246 ;
0247 ;
0248 ;
0249 ;
0250 ;
0251 ;
0252 ;
0253 ;
0254 ;
0255 ;
0256 ;
0257 ;
0258 ;
0259 ;
0260 ;
0261 ;
0262 ;
0263 ;
0264 ;
0265 ;
0266 ;
0267 ;
0268 ;
0269 ;
0270 ;
0271 ;
0272 ;
0273 ;
0274 ;
0275 ;
0276 ;
0277 ;
0278 ;
0279 ;
0280 ;
0281 ;
0282 ;
0283 ;
0284 ;
0285 ;
0286 ;
0287 ;
0288 ;
0289 ;
0290 ;
0291 ;
0292 ;
0293 ;
0294 ;
0295 ;
0296 ;
0297 ;
0298 ;
0299 ;
0300 ;
0301 ;
0302 ;
0303 ;
0304 ;
0305 ;
0306 ;
0307 ;
0308 ;
0309 ;
0310 ;
0311 ;
0312 ;
0313 ;
0314 ;
0315 ;
0316 ;
0317 ;
0318 ;
0319 ;
0320 ;
0321 ;
0322 ;
0323 ;
0324 ;
0325 ;
0326 ;
0327 ;
0328 ;
0329 ;
0330 ;
0331 ;
0332 ;
0333 ;
0334 ;
0335 ;
0336 ;
0337 ;
0338 ;
0339 ;
0340 ;
0341 ;
0342 ;
0343 ;
0344 ;
0345 ;
0346 ;
0347 ;
0348 ;
0349 ;
0350 ;
0351 ;
0352 ;
0353 ;
0354 ;
0355 ;
0356 ;
0357 ;
0358 ;
0359 ;
0360 ;
0361 ;
0362 ;
0363 ;
0364 ;
0365 ;
0366 ;
0367 ;
0368 ;
0369 ;
0370 ;
0371 ;
0372 ;
0373 ;
0374 ;
0375 ;
0376 ;
0377 ;
0378 ;
0379 ;
0380 ;
0381 ;
0382 ;
0383 ;
0384 ;
0385 ;
0386 ;
0387 ;
0388 ;
0389 ;
0390 ;
0391 ;
0392 ;
0393 ;
0394 ;
0395 ;
0396 ;
0397 ;
0398 ;
0399 ;
0400 ;
0401 ;
0402 ;
0403 ;
0404 ;
0405 ;
0406 ;
0407 ;
0408 ;
0409 ;
0410 ;
0411 ;
0412 ;
0413 ;
0414 ;
0415 ;
0416 ;
0417 ;
0418 ;
0419 ;
0420 ;
0421 ;
0422 ;
0423 ;
0424 ;
0425 ;
0426 ;
0427 ;
0428 ;
0429 ;
0430 ;
0431 ;
0432 ;
0433 ;
0434 ;
0435 ;
0436 ;
0437 ;
0438 ;
0439 ;
0440 ;
0441 ;
0442 ;
0443 ;
0444 ;
0445 ;
0446 ;
0447 ;
0448 ;
0449 ;
0450 ;
0451 ;
0452 ;
0453 ;
0454 ;
0455 ;
0456 ;
0457 ;
0458 ;
0459 ;
0460 ;
0461 ;
0462 ;
0463 ;
0464 ;
0465 ;
0466 ;
0467 ;
0468 ;
0469 ;
0470 ;
0471 ;
0472 ;
0473 ;
0474 ;
0475 ;
0476 ;
0477 ;
0478 ;
0479 ;
0480 ;
0481 ;
0482 ;
0483 ;
0484 ;
0485 ;
0486 ;
0487 ;
0488 ;
0489 ;
0490 ;
0491 ;
0492 ;
0493 ;
0494 ;
0495 ;
0496 ;
0497 ;
0498 ;
0499 ;
0500 ;
0501 ;
0502 ;
0503 ;
0504 ;
0505 ;
0506 ;
0507 ;
0508 ;
0509 ;
0510 ;
0511 ;
0512 ;
0513 ;
0514 ;
0515 ;
0516 ;
0517 ;
0518 ;
0519 ;
0520 ;
0521 ;
0522 ;
0523 ;
0524 ;
0525 ;
0526 ;
0527 ;
0528 ;
0529 ;
0530 ;
0531 ;
0532 ;
0533 ;
0534 ;
0535 ;
0536 ;
0537 ;
0538 ;
0539 ;
0540 ;
0541 ;
0542 ;
0543 ;
0544 ;
0545 ;
0546 ;
0547 ;
0548 ;
0549 ;
0550 ;
0551 ;
0552 ;
0553 ;
0554 ;
0555 ;
0556 ;
0557 ;
0558 ;
0559 ;
0560 ;
0561 ;
0562 ;
0563 ;
0564 ;
0565 ;
0566 ;
0567 ;
0568 ;
0569 ;
0570 ;
0571 ;
0572 ;
0573 ;
0574 ;
0575 ;
0576 ;
0577 ;
0578 ;
0579 ;
0580 ;
0581 ;
0582 ;
0583 ;
0584 ;
0585 ;
0586 ;
0587 ;
0588 ;
0589 ;
0590 ;
0591 ;
0592 ;
0593 ;
0594 ;
0595 ;
0596 ;
0597 ;
0598 ;
0599 ;
0600 ;
0601 ;
0602 ;
0603 ;
0604 ;
0605 ;
0606 ;
0607 ;
0608 ;
0609 ;
0610 ;
0611 ;
0612 ;
0613 ;
0614 ;
0615 ;
0616 ;
0617 ;
0618 ;
0619 ;
0620 ;
0621 ;
0622 ;
0623 ;
0624 ;
0625 ;
0626 ;
0627 ;
0628 ;
0629 ;
0630 ;
0631 ;
0632 ;
0633 ;
0634 ;
0635 ;
0636 ;
0637 ;
0638 ;
0639 ;
0640 ;
0641 ;
0642 ;
0643 ;
0644 ;
0645 ;
0646 ;
0647 ;
0648 ;
0649 ;
0650 ;
0651 ;
0652 ;
0653 ;
0654 ;
0655 ;
0656 ;
0657 ;
0658 ;
0659 ;
0660 ;
0661 ;
0662 ;
0663 ;
0664 ;
0665 ;
0666 ;
0667 ;
0668 ;
0669 ;
0670 ;
0671 ;
0672 ;
0673 ;
0674 ;
0675 ;
0676 ;
0677 ;
0678 ;
0679 ;
0680 ;
0681 ;
0682 ;
0683 ;
0684 ;
0685 ;
0686 ;
0687 ;
0688 ;
0689 ;
0690 ;
0691 ;
0692 ;
0693 ;
0694 ;
0695 ;
0696 ;
0697 ;
0698 ;
0699 ;
0700 ;
0701 ;
0702 ;
0703 ;
0704 ;
0705 ;
0706 ;
0707 ;
0708 ;
0709 ;
0710 ;
0711 ;
0712 ;
0713 ;
0714 ;
0715 ;
0716 ;
0717 ;
0718 ;
0719 ;
0720 ;
0721 ;
0722 ;
0723 ;
0724 ;
0725 ;
0726 ;
0727 ;
0728 ;
0729 ;
0730 ;
0731 ;
0732 ;
0733 ;
0734 ;
0735 ;
0736 ;
0737 ;
0738 ;
0739 ;
0740 ;
0741 ;
0742 ;
0743 ;
0744 ;
0745 ;
0746 ;
0747 ;
0748 ;
0749 ;
0750 ;
0751 ;
0752 ;
0753 ;
0754 ;
0755 ;
0756 ;
0757 ;
0758 ;
0759 ;
0760 ;
0761 ;
0762 ;
0763 ;
0764 ;
0765 ;
0766 ;
0767 ;
0768 ;
0769 ;
0770 ;
0771 ;
0772 ;
0773 ;
0774 ;
0775 ;
0776 ;
0777 ;
0778 ;
0779 ;
0780 ;
0781 ;
0782 ;
0783 ;
0784 ;
0785 ;
0786 ;
0787 ;
0788 ;
0789 ;
0790 ;
0791 ;
0792 ;
0793 ;
0794 ;
0795 ;
0796 ;
0797 ;
0798 ;
0799 ;
0800 ;
0801 ;
0802 ;
0803 ;
0804 ;
0805 ;
0806 ;
0807 ;
0808 ;
0809 ;
0810 ;
0811 ;
0812 ;
0813 ;
0814 ;
0815 ;
0816 ;
0817 ;
0818 ;
0819 ;
0820 ;
0821 ;
0822 ;
0823 ;
0824 ;
0825 ;
0826 ;
0827 ;
0828 ;
0829 ;
0830 ;
0831 ;
0832 ;
0833 ;
0834 ;
0835 ;
0836 ;
0837 ;
0838 ;
0839 ;
0840 ;
0841 ;
0842 ;
0843 ;
0844 ;
0845 ;
0846 ;
0847 ;
0848 ;
0849 ;
0850 ;
0851 ;
0852 ;
0853 ;
0854 ;
0855 ;
0856 ;
0857 ;
0858 ;
0859 ;
0860 ;
0861 ;
0862 ;
0863 ;
0864 ;
0865 ;
0866 ;
0867 ;
0868 ;
0869 ;
0870 ;
0871 ;
0872 ;
0873 ;
0874 ;
0875 ;
0876 ;
0877 ;
0878 ;
0879 ;
0880 ;
0881 ;
0882 ;
0883 ;
0884 ;
0885 ;
0886 ;
0887 ;
0888 ;
0889 ;
0890 ;
0891 ;
0892 ;
0893 ;
0894 ;
0895 ;
0896 ;
0897 ;
0898 ;
0899 ;
0900 ;
0901 ;
0902 ;
0903 ;
0904 ;
0905 ;
0906 ;
0907 ;
0908 ;
0909 ;
0910 ;
0911 ;
0912 ;
0913 ;
0914 ;
0915 ;
0916 ;
0917 ;
0918 ;
0919 ;
0920 ;
0921 ;
0922 ;
0923 ;
0924 ;
0925 ;
0926 ;
0927 ;
0928 ;
0929 ;
0930 ;
0931 ;
0932 ;
0933 ;
0934 ;
0935 ;
0936 ;
0937 ;
0938 ;
0939 ;
0940 ;
0941 ;
0942 ;
0943 ;
0944 ;
0945 ;
0946 ;
0947 ;
0948 ;
0949 ;
0950 ;
0951 ;
0952 ;
0953 ;
0954 ;
0955 ;
0956 ;
0957 ;
0958 ;
0959 ;
0960 ;
0961 ;
0962 ;
0963 ;
0964 ;
0965 ;
0966 ;
0967 ;
0968 ;
0969 ;
0970 ;
0971 ;
0972 ;
0973 ;
0974 ;
0975 ;
0976 ;
0977 ;
0978 ;
0979 ;
0980 ;
0981 ;
0982 ;
0983 ;
0984 ;
0985 ;
0986 ;
0987 ;
0988 ;
0989 ;
0990 ;
0991 ;
0992 ;
0993 ;
0994 ;
0995 ;
0996 ;
0997 ;
0998 ;
0999 ;
1000 ;
1001 ;
1002 ;
1003 ;
1004 ;
1005 ;
1006 ;
1007 ;
1008 ;
1009 ;
1010 ;
1011 ;
1012 ;
1013 ;
1014 ;
1015 ;
1016 ;
1017 ;
1018 ;
1019 ;
1020 ;
1021 ;
1022 ;
1023 ;
1024 ;
1025 ;
1026 ;
1027 ;
1028 ;
1029 ;
1030 ;
1031 ;
1032 ;
1033 ;
1034 ;
1035 ;
1036 ;
1037 ;
1038 ;
1039 ;
1040 ;
1041 ;
1042 ;
1043 ;
1044 ;
1045 ;
1046 ;
1047 ;
1048 ;
1049 ;
1050 ;
1051 ;
1052 ;
1053 ;
1054 ;
1055 ;
1056 ;
1057 ;
1058 ;
1059 ;
1060 ;
1061 ;
1062 ;
1063 ;
1064 ;
1065 ;
1066 ;
1067 ;
1068 ;
1069 ;
1070 ;
1071 ;
1072 ;
1073 ;
1074 ;
1075 ;
1076 ;
1077 ;
1078 ;
1079 ;
1080 ;
1081 ;
1082 ;
1083 ;
1084 ;
1085 ;
1086 ;
1087 ;
1088 ;
1089 ;
1090 ;
1091 ;
1092 ;
1093 ;
1094 ;
1095 ;
1096 ;
1097 ;
1098 ;
1099 ;
1100 ;
1101 ;
1102 ;
1103 ;
1104 ;
1105 ;
1106 ;
1107 ;
1108 ;
1109 ;
1110 ;
1111 ;
1112 ;
1113 ;
1114 ;
1115 ;
1116 ;
1117 ;
1118 ;
1119 ;
1120 ;
1121 ;
1122 ;
1123 ;
1124 ;
1125 ;
1126 ;
1127 ;
1128 ;
1129 ;
1130 ;
1131 ;
1132 ;
1133 ;
1134 ;
1135 ;
1136 ;
1137 ;
1138 ;
1139 ;
1140 ;
1141 ;
1142 ;
1143 ;
1144 ;
1145 ;
1146 ;
1147 ;
1148 ;
1149 ;
1150 ;
1151 ;
1152 ;
1153 ;
1154 ;
1155 ;
1156 ;
1157 ;
1158 ;
1159 ;
1160 ;
1161 ;
1162 ;
1163 ;
1164 ;
1165 ;
1166 ;
1167 ;
1168 ;
1169 ;
1170 ;
1171 ;
1172 ;
1173 ;
1174 ;
1175 ;
1176 ;
1177 ;
1178 ;
1179 ;
1180 ;
1181 ;
1182 ;
1183 ;
1184 ;
1185 ;
1186 ;
1187 ;
1188 ;
1189 ;
1190 ;
1191 ;
1192 ;
1193 ;
1194 ;
1195 ;
1196 ;
1197 ;
1198 ;
1199 ;
1200 ;
1201 ;
1202 ;
1203 ;
1204 ;
1205 ;
1206 ;
1207 ;
1208 ;
1209 ;
1210 ;
1211 ;
1212 ;
1213 ;
1214 ;
1215 ;
1216 ;
1217 ;
1218 ;
1219 ;
1220 ;
1221 ;
1222 ;
1223 ;
1224 ;
1225 ;
1226 ;
1227 ;
1228 ;
1229 ;
1230 ;
1231 ;
1232 ;
1233 ;
1234 ;
1235 ;
1236 ;
1237 ;
1238 ;
1239 ;
1240 ;
1241 ;
1242 ;
1243 ;
1244 ;
1245 ;
1246 ;
1247 ;
1248 ;
1249 ;
1250 ;
1251 ;
1252 ;
1253 ;
1254 ;
1255 ;
1256 ;
1257 ;
1258 ;
1259 ;
1260 ;
1261 ;
1262 ;
1263 ;
1264 ;
1265 ;
1266 ;
1267 ;
1268 ;
1269 ;
1270 ;
1271 ;
1272 ;
1273 ;
1274 ;
1275 ;
1276 ;
1277 ;
1278 ;
1279 ;
1280 ;
1281 ;
1282 ;
1283 ;
1284 ;
1285 ;
1286 ;
1287 ;
1288 ;
1289 ;
1290 ;
1291 ;
1292 ;
1293 ;
1294 ;
1295 ;
1296 ;
1297 ;
1298 ;
1299 ;
1300 ;
1301 ;
1302 ;
1303 ;
1304 ;
1305 ;
1306 ;
1307 ;
1308 ;
1309 ;
1310 ;
1311 ;
1312 ;
1313 ;
1314 ;
1315 ;
1316 ;
1317 ;
1318 ;
1319 ;
1320 ;
1321 ;
1322 ;
1323 ;
1324 ;
1325 ;
1326 ;
1327 ;
1328 ;
1329 ;
1330 ;
1331 ;
1332 ;
1333 ;
1334 ;
1335 ;
1336 ;
1337 ;
1338 ;
1339 ;
1340 ;
1341 ;
1342 ;
1343 ;
1344 ;
1345 ;
1346 ;
1347 ;
1348 ;
1349 ;
1350 ;
1351 ;
1352 ;
1353 ;
1354 ;
1355 ;
1356 ;
1357 ;
1358 ;
1359 ;
1360 ;
1361 ;
1362 ;
1363 ;
1364 ;
1365 ;
1366 ;
1367 ;
1368 ;
1369 ;
1370 ;
1371 ;
1372 ;
1373 ;
1374 ;
1375 ;
1376 ;
1377 ;
1378 ;
1379 ;
1380 ;
1381 ;
1382 ;
1383 ;
1384 ;
1385 ;
1386 ;
1387 ;
1388 ;
1389 ;
1390 ;
1391 ;
1392 ;
1393 ;
1394 ;
1395 ;
1396 ;
1397 ;
1398 ;
1399 ;
1400 ;
1401 ;
1402 ;
1403 ;
1404 ;
1405 ;
1406 ;
1407 ;
1408 ;
1409 ;
1410 ;
1411 ;
1412 ;
1413 ;
1414 ;
1415 ;
1416 ;
1417 ;
1418 ;
1419 ;
1420 ;
1421 ;
1422 ;
1423 ;
1424 ;
1425 ;
1426 ;
1427 ;
1428 ;
1429 ;
1430 ;
1431 ;
1432 ;
1433 ;
1434 ;
1435 ;
1436 ;
1437 ;
1438 ;
1439 ;
1440 ;
1441 ;
1442 ;
1443 ;
1444 ;
1445 ;
1446 ;
1447 ;
1448 ;
1449 ;
1450 ;
1451 ;
1452 ;
1453 ;
1454 ;
1455 ;
1456 ;
1457 ;
1458 ;
1459 ;
1460 ;
1461 ;
1462 ;
1463 ;
1464 ;
1465 ;
1466 ;
1467 ;
1468 ;
1469 ;
1470 ;
1471 ;
1472 ;
1473 ;
1474 ;
1475 ;
1476 ;
1477 ;
1478 ;
1479 ;
1480 ;
1481 ;
1482 ;
1483 ;
1484 ;
1485 ;
1486 ;
1487 ;
1488 ;
1489 ;
1490 ;
1491 ;
1492 ;
1493 ;
1494 ;
1495 ;
1496 ;
1497 ;
1498 ;
1499 ;
1500 ;
1501 ;
1502 ;
1503 ;
1504 ;
1505 ;
1506 ;
1507 ;
1508 ;
1509 ;
1510 ;
1511 ;
1512 ;
1513 ;
1514 ;
1515 ;
1516 ;
1517 ;
1518 ;
1519 ;
1520 ;
1521 ;
1522 ;
1523 ;
1524 ;
1525 ;
1526 ;
1527 ;
1528 ;
1529 ;
1530 ;
1531 ;
1532 ;
1533 ;
1534 ;
1535 ;
1536 ;
1537 ;
1538 ;
1539 ;
1540 ;
1541 ;
1542 ;
1543 ;
1544 ;
1545 ;
1546 ;
1547 ;
1548 ;
1549 ;
1550 ;
1551 ;
1552 ;
1553 ;
1554 ;
1555 ;
1556 ;
1557 ;
1558 ;
1559 ;
1560 ;
1561 ;
1562 ;
1563 ;
1564 ;
1565 ;
1566 ;
1567 ;
1568 ;
1569 ;
1570 ;
1571 ;
1572 ;
1573 ;
1574 ;
1575 ;
1576 ;
1577 ;
1578 ;
1579 ;
1580 ;
1581 ;
1582 ;
1583 ;
1584 ;
1585 ;
1586 ;
1587 ;
1588 ;
1589 ;
1590 ;
1591 ;
1592 ;
1593 ;
1594 ;
1595 ;
1596 ;
1597 ;
1598 ;
1599 ;
1600 ;
1601 ;
1602 ;
1603 ;
1604 ;
1605 ;
1606 ;
1607 ;
1608 ;
1609 ;
1610 ;
1611 ;
1612 ;
1613 ;
1614 ;
1615 ;
1616 ;
1617 ;
1618 ;
1619 ;
1620 ;
1621 ;
1622 ;
1623 ;
1624 ;
1625 ;
1626 ;
1627 ;
1628 ;
1629 ;
1630 ;
1631 ;
1632 ;
1633 ;
1634 ;
1635 ;
1636 ;
1637 ;
1638 ;
1639 ;
1640 ;
1641 ;
1642 ;
1643 ;
1644 ;
1645 ;
1646 ;
1647 ;
1648 ;
1649 ;
1650 ;
1651 ;
1652 ;
1653 ;
1654 ;
1655 ;
1656 ;
1657 ;
1658 ;
1659 ;
1660 ;
1661 ;
1662 ;
1663 ;
1664 ;
1665 ;
1666 ;
1667 ;
1668 ;
1669 ;
1670 ;
1671 ;
1672 ;
1673 ;
1674 ;
1675 ;
1676 ;
1677 ;
1678 ;
1679 ;
1680 ;
1681 ;
1682 ;
1683 ;
1684 ;
1685 ;
1686 ;
1687 ;
1688 ;
1689 ;
1690 ;
1691 ;
1692 ;
1693 ;
1694 ;
1695 ;
1696 ;
1697 ;
1698 ;
1699 ;
1700 ;
1701 ;
1702 ;
1703 ;
1704 ;
1705 ;
1706 ;
1707 ;
1708 ;
1709 ;
1710 ;
1711 ;
1712 ;
1713 ;
1714 ;
1715 ;
1716 ;
1717 ;
1718 ;
1719 ;
1720 ;
1721 ;
1722 ;
1723 ;
1724 ;
1725 ;
1726 ;
1727 ;
1728 ;
1729 ;
1730 ;
1731 ;
1732 ;
1733 ;
1734 ;
1735 ;
1736 ;
1737 ;
1738 ;
1739 ;
1740 ;
1741 ;
1742 ;
1743 ;
1744 ;
1745 ;
1746 ;
1747 ;
1748 ;
1749 ;
1750 ;
1751 ;
1752 ;
1753 ;
1754 ;
1755 ;
1756 ;
1757 ;
1758 ;
1759 ;
1760 ;
1761 ;
1762 ;
1763 ;
1764 ;
1765 ;
1766 ;
1767 ;
1768 ;
1769 ;
1770 ;
1771 ;
1772 ;
1773 ;
1774 ;
1775 ;
1776 ;
1777 ;
1778 ;
1779 ;
1780 ;
1781 ;
1782 ;
1783 ;
1784 ;
1785 ;
1786 ;
1787 ;
1788 ;
1789 ;
1790 ;
1791 ;
1792 ;
1793 ;
1794 ;
1795 ;
1796 ;
1797 ;
1798 ;
1799 ;
1800 ;
1801 ;
1802 ;
1803 ;
1804 ;
1805 ;
1806 ;
1807 ;
1808 ;
1809 ;
1810 ;
1811 ;
1812 ;
1813 ;
1814 ;
1815 ;
1816 ;
1817 ;
1818 ;
1819 ;
1820 ;
1821 ;
1822 ;
1823 ;
1824 ;
1825 ;
1826 ;
1827 ;
1828 ;
1829 ;
1830 ;
1831 ;
1832 ;
1833 ;
1834 ;
1835 ;
1836 ;
1837 ;
1838 ;
1839 ;
1840 ;
1841 ;
1842 ;
1843 ;
1844 ;
1845 ;
1846 ;
1847 ;
1848 ;
1849 ;
1850 ;
1851 ;
1852 ;
1853 ;
1854 ;
1855 ;
1856 ;
1857 ;
1858 ;
1859 ;
1860 ;
1861 ;
1862 ;
1863 ;
1864 ;
1865 ;
1866 ;
1867 ;
1
```

CHRISTMAS ONCE A YEAR. GAMES ONCE IN A



ACTIVISION®

video game cartridges for use with
the Atari® Video Computer System®**

STARMASTER™

You are cruising through an empty part of the galaxy, but squadrons of enemy starfighters are threatening your four friendly starbases. You call up your Galactic Chart and plot a course to intercept. Warping through hyperspace en route you avoid deadly showers of meteorites. Now your gunsight is flashing and the enemy is near. You destroy them with your laser cannon but your computer read-out tells you that their fire has destroyed your shields and drained your energy

reserves.

Again you call up the Galactic Chart and plot a course to your starbase. You dock, and your damage is repaired, your energy banks replenished. Back you go to re-engage the enemy.

Now you have some idea of the astonishing realism and excitement of this Space Odyssey.

CHOPPER COMMAND™

A convoy of trucks is ferrying vital medical supplies through the arid desert. You are flying escort in your helicopter gunship.

Suddenly a flight of enemy machines shows up on your long range scanner and you head in to attack with your laser cannon. They reply with deadly multi-warhead missiles. You start with two choppers in reserve, and add another for each 10,000 points scored, up to a maximum of six.

S COMES BUT S AS GREAT AS THESE A LIFETIME.



You'll need to move very fast to destroy this enemy, for the more you shoot down, the faster they get. So even though your chopper is really manoeuvrable (a touch on the joystick sends it into an instantaneous 180° turn) you'll find the opposing helicopters and jets very difficult to defeat. It's by no means easy. It requires lots of strategy and lightning reflexes and that's why 'Chopper Command' is destined to become one of the all-time video game classics.

STARMASTER® and COPPER COMMAND® just two of the great ACTIVISION® range of video game cartridges for use with the Atari® Video Computer System.® Each and every ACTIVISION® cartridge features an outstanding game concept and the quality of the graphics just has to be seen to be believed. So get along to your local video game stockist and see the range demonstrated.

*Atari® and Video Computer System® are trademarks of Atari, Inc.

To: CGL Activation
Fun Club, FREEPOST,
Loughton, Essex
IG10 1BR. (No stamp
required). Tel: Kathy Leonard
on 0628-72448/32839.

Please register me as a member
of the Activation Fun Club. I understand that membership
is entirely free and entitles me to a 50p cash rebate token,
a free regular magazine and the opportunity to
participate in special Activation competitions.

First Name(s) _____

Surname _____

Age (tick one) 11 or under ☐ 12-17 ☐ 18-25 ☐ 26 or over ☐

Address _____

Postcode _____

'Bringing leisure to life'





YOU'VE SEEN THE PICTURES, NOW SEND FOR THE WORDS

BBC Microcomputer or Acorn Atom

Acornsoft is the software division of Acorn Computers, designers and manufacturers, of the BBC Micro and Atom. We know better than anyone the capability of the machines, we know how to get the very best from the hardware. And we have produced a range of exciting games, exacting business and useful household software.

The Biggest Range Available

Acornsoft software ranges from authentic arcade games like Snapper to Algebraic Manipulation to Desk Diary to other languages like FORTH and LISP. Striking colour, amazing sound effects and powerful

graphics are all used to the full. And it does not stop there. There is a complete range of manuals, accessories and plug-in ROMs.

Free Brochures

Just clip the coupon or write to us and we will rush our catalogue absolutely free. Can't wait for the post ring 01-930 1614 now! Don't delay—do it today. Let Acornsoft help you get the best from our machine and open the doors to your imagination.

Acornsoft and Atom are registered trade marks of Acorn Computers Ltd.

ACORN^{SOFT}

4A Market Hill,
CAMBRIDGE CB2 3NJ.

FREE!

Please rush me my free literature from Acornsoft.

☐ Atom

☐ BBC Please tick

Name

Address

Postcode



MYSTERIOUS ADVENTURES



Join the growing band of Adventurers who are enjoying these absorbing and stimulating programs. Step into another world of Fantasy, Magic, Mystery and Sorcery. Only your wits and cunning can ensure success in these scenarios!

FOR BBC MICROCOMPUTER
MODELS A & B*

1. THE GOLDEN BATON — Venture into a strange province of Sorcery and Evil Magic to recover the Golden Baton, a priceless artifact whose powers are said to bring great Health and Prosperity to the Land.
2. THE TIME MACHINE — As a Newspaper reporter you are sent to investigate the eccentric professor who lives in the old house on the Moors. What is his secret and why is his house now deserted?
3. ARROW OF DEATH (Pl. 1) — A blight has fallen on your homelands, the Baton has become tarnished and now radiates a malevolent aura of Evil. Your mission is clear — trace the source of this Evil and destroy... or be destroyed. This is the first part of an Epic Adventure although each part can be played as a stand alone scenario.
4. ARROW OF DEATH (Pl. 2) — You now have the means to destroy your enemy... but you are far from home and this land is strange to you. Can you cope with the deadly peril which approach you and have you the strength to see your mission through to the final conflict?



- WRITTEN IN ULTRA-FAST MACHINE CODE.
- SAVE GAME FEATURE.
- SPLIT SCREEN DISPLAY.
- SOUND AND GRAPHICS ON ADVENTURES 5, 6, & 7.

5. ESCAPE FROM PULSAR 7 — Alone on a gigantic Space-Freighter... The rest of your crew have died horribly at the hands of a mutated Zoo-Specimen. Your only chance of escape is to reach the Frail Shuttlecraft. But the lurking Monster is hungry and you are the only food it has left...
6. CIRCUS — Your Car has run out of Petrol on a lonely road miles from habitation. As you trudge reluctantly down the road in search of help you are suddenly confronted by an amazing sight... in a nearby field is a Huge Circus tent! But this is no ordinary Circus as you will soon discover.
7. FEASIBILITY EXPERIMENT — Far across the gulfs of time and space, a dying race of super-intelligent beings search the Universe for a Hero to save their existence... At length their thoughts turn to planet Earth. You are chosen to be their saviour in a bizarre scenario where death is a mere thought away...

* Adventures 5, 6 and 7 require 32K RAM.

Each adventure comes attractively packaged for just £8.95 inc. VAT.
Now in stock for ATARI 400/800 £12.50.
Available soon for ZX SPECTRUM, ZX81 (16K), APPLE II.



SEND CHEQUE OR P.O. TO:

DIGITAL FANTASIA DEPT DWL

24 NORBROCK ROAD, NORBROCK, BLACKPOOL, LANCASHIRE.
Tel. (0253) 56279

Graphics



IN-BETWEEN THE LINES

To produce graphics that move, a technique known as "in-betweening" can be used to automatically give the stages in an animated sequence.

As its name suggests, when given starting and finishing pictures, the technique will provide all the frames in between, and in the correct order. This method has been used in one form or another to help automate the production of cartoon films.

Computers have been adopted to relieve artists of the routine tasks of creating the in-between frames for many sequences.

To begin with a simple example, the frame that is half way between a square and a tall thin rectangle can be constructed as shown in figure 1. The dashed lines show the paths from the points on the first frame to the corresponding points on the last frame. The frame that is half way between the first and the last is virtually half way along these paths.

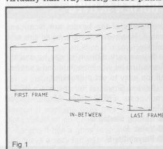


Fig 1

The in-between frame in this example has the shape that we would expect. It has been produced entirely by geometric means, and any number of in-between frames could have been generated in essentially the same way. It only remains to develop a program to carry out the same process.

In writing the program, we must first decide how a picture is to be stored, since we must provide the initial and final pictures. We can do this by storing the column and row positions of every point that has to

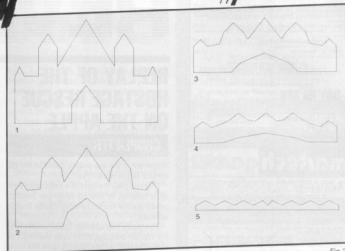


Fig 2

be joined up in order to draw the picture in two arrays.

We shall store the column and row positions respectively for the first picture in the arrays XF and YF, and for the last picture in the arrays XL and YL.

The following program will then draw the first frame, an in-between frame half way between the first and last frames, and then the last frame. It assumes that the frames are each drawn by joining 25 points, but this number can be changed throughout to any other.

```

10 DIM
   XF(25),YF(25),XL(25),YL(25)
20 REM ENTER COLUMN AND
   ROW POSITIONS
30 REM FOR FIRST AND LAST
   FRAMES
100 REM DRAW FIRST FRAME
110 MOVE XF(1),YF(1)
120 FOR J=2 TO 25
130 DRAW XF(J),YF(J)
140 NEXT J
200 REM DRAW IN-BETWEEN
   FRAME
210 MOVE (XF(1)+XL(1))/
   2,(YF(1)+YL(1))/2
220 FOR J=2 TO 25
230 DRAW (XF(J)+XL(J))/
   2,(YF(J)+YL(J))/2
240 NEXT J
400 REM DRAW LAST FRAME
410 MOVE XL(1),YL(1)
420 FOR J=2 TO 25
430 DRAW XL(J),YL(J)
440 NEXT J

```

The program can be developed further to draw any number of frames in between the first and the last. The program is written so that the user can enter the number of in-between frames that is required. The program is obtained by replacing all the lines with line numbers in the two-hundreds in the previous program with the following segment.

```

200 REM DRAW ANY NUMBER
   OF IN-BETWEEN FRAMES
210 INPUT "NUMBER OF IN-
   BETWEEN FRAMES",NF
220 FOR I=1 TO NF
230 X=(XF(1)*(NF+1-I)+XL(1)*I)/
   (NF+1)
240 Y=(YF(1)*(NF+1-I)+YL(1)*I)/
   (NF+1)
250 MOVE X,Y
260 FOR J=2 TO 25
270 X=(XF(J)*(NF+1-I)+XL(J)*I)/
   (NF+1)
280 Y=(YF(J)*(NF+1-I)+YL(J)*I)/
   (NF+1)
290 DRAW X,Y
300 NEXT J
310 NEXT I

```

The sequence shown in figure 2 was produced with this program. In order to generate realistic sequences, the initial and final frames should not be too dissimilar. However, when very different frames are used for the first and last ones, some very interesting, and sometimes artistic, results can be obtained.

XZ81	Spectrum	BBC	VIC
GAMES CASSETTES			
XZ81 (18k) Super Invaders	On-screen leader titles.	Game in machine code — "excellent".	6.95
	One of the two best... extremely popular (top 10).		
XZ81 (18k) Labyrinth	Absolutely brilliant S.F. game.		6.95
XZ81 (18k) Labyrinth	For 2 players. Excellent for the family.		6.95
	Fun, educational! Lots of information, on-screen scoring.		6.95
Spectrum (18k) Labyrinth			10.95
	Excellent! A real test of judgement of colour, sound and timing.		
XZ81 (18k) expanded Invaders	VC-20 version.		7.95
	Machine code, colour, sound.		19.90
	The popular grabber game. Hi-res, colour, sound.		
Our motto — quality at competitive prices.			
Prices all inclusive — we take care of everything!			
*I must apologise you not only on the quality of your goods			
but also on our excellent service.			
Applications software also available			
Marchmont Microcomputing Ltd			
XZ81 16k RAM	All-inclusive price		£28.90
Send a s.p. for details of all our products			
Dept. CVO, 96, The Quadrant,			
Margate Bridge, STOCKPORT,			
Cheshire SK6 8SE			

"AS LAST... EXCITING AND ABSORBING COMPUTER GAMES WHICH CHALLENGE YOUR MIND, AND NOT JUST YOUR WISDOM."

ZIG ZAGG (Spectrum) FOR TWO PLAYERS.

XBOX 11841 (Spectrum) (MSB) score.

"CONFLICT!" — a tactical war game involving both the machinery and the mind. It's a head-on clash between the Franco-Italian market, oil, strategy of conflict.

"I enjoyed this strategy game as it made me think, rather than being a simple shoot 'em up." As all the work, as so many other top computer games do.

"COMBAT" (Spectrum) FOR TWO PLAYERS.

"GALAXY CONFLICT..." — takes a form of powerful battle computers that make you feel like a general in a real-time strategy game, and in an intense battle for the Galaxy. A game to challenge people's Galactic rulers.

IDEAL CHRISTMAS GIFTS FOR THINKING ZIG ZAGGISTS!

GAMES include: cassette tape, full size board, pen and paper, and a set of cards. (Spectrum) FOR TWO PLAYERS.

MARTECH GAMES, 9 Dillingworth Road, Eastbourne, East Sussex TN20 6JL.

1. SALARY 7000 IS —486— 4 levels, 3 weapons: hyper laser and high speed.
2. UFO ATTACK (MC) IS —Arcade style game: 4 versions, 3 waves and more.
3. LIFE (MC) = ADVENTURE IS together: Excellent value for money.
4. LIFE (LANDER, UFO DESTROY) = SPACECAPER IS together: All fast machine guns.
5. LIFE (SPACE) IS 4 —3 versions and up to 80 aliens at once.
6. UFO DEFEND (MC) IS —Defend your base from the attacking aliens.
7. THE WORD GAME (MC) IS —Can you cheat the computer and its vocabulary of 1000's of words?
8. NUCLEAR DEFENSE CHALLENGE QP 9 P 2 = 4.
9. NUCLEAR AND STRIKEPOST RD, DENTON, MANCHESTER M24 1TG.

Could you survive in today's financial jungle? Find out with Portfolio, our new investment game.

Portfolio is a detailed and extremely realistic game simulating activity in the gold, stock and share markets.

You invest against a background of bank interest rates, inflation, your credit limit and the cost of living.

Skill, luck and nerve are required to succeed.

For VIC 20 (+8K min) or ZX81 (+16K) Price £8 from:

**SOFT OPTIONS,
11, ARDMONTE COURT**

① Can of Worms £3
8 GAMES – ACNE, VASECTOMY, SMUT, DOGS,
HITLER, ROYAL FLUSH, REAGAN, PS & OS.

② Love & Death £5
8 GAMES – SEDUCTION, CONCEPTION, BIRTH
RUBIC'S PUBS, ON THE JOB, POS, DEATHGOD

The Bible £5
10 GAMES – GENESIS, ADAM & EVE, NOAH,
PLAGUES OF EGYPT, EXODUS, HOLY MOSH,
SODOM DAVID GOLIATH, JONAH, BET SHELEM
ALL games include 60 soundtracks & full notes
AUTOMATA LTD. (V) 65A OSBORNE RD.
PORTSMOUTH, HANTS, PO5 3LR
TELEPHONE (0705) 735242 TELEX 866292

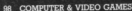
REPLAY OF THE HOSTAGE RESCUE ON THE APPLE

THIS ONE WILL GO DOWN FIGHTING

Golden Gloves is a colourful game and

- Getting started 9
- Playability 8
- Value for money 7

- Getting started 9
- Value 5
- Playability 5



REVIEWS



ALL THE KING'S MEN PLAYING AROUND WITH VIC

VIC CHESS

So you want to play chess on the Vic? Well we looked up three ways of turning the Vic-20 into a chess opponent.

Let's start with Commodore's offering, Sargon II, which comes at £21.70 in cartridge form and has the advantage of not needing any additional memory.

The board display is easily distinguished and it does offer the most comprehensive set of instructions for use.

Chess is the sort of familiar game which you need a lot of instruction on and the Sargon II package does give a very complete rundown on its six levels.

Sargon II has a good response time and also plays a very fair opening without ever suggesting it had any book theory crammed into its memory.

Contrary to chess players who feel that a machine should be judged on the number of different levels it boasts, six is quite enough and probably more than most chess players will find a use for.

It is hard to fault this well-presented cartridge except on price which does not compare favourably with its two rivals, but remember that both of these will need additional memory to play. It is available from all good Commodore dealers.

- Getting Started 10
- Value 8
- Playability 7

Chess is a chess phenomenon. How its German programmers managed to get it to play as well as it does on just the basic Vic-20 and an 8K memory expansion is beyond me.

It has nought-to-nine levels of play which take you from a one second to four hours response time but my own favourite was level 2 which responded in five seconds on average.

There is a good book opening understanding built into this program and it followed a Sicilian Defence through to the sixth move before attempting the unusual.

Perhaps the most impressive thing about Boss was that it never seemed to stop trying in a game and even when I had given games up as draws it still attempted to gain something positive from the positions.

Boss's display is the best of the three and it accepts four key move entries. It also runs independent chess clocks on both players and offers the additional challenge of trying to beat it while only taking five seconds per move.

On the minus side: it is difficult to spot the moves as the pieces don't flash, there are some terse instructions and it displays the mate and stalemate comments in German. Also it took me three loads the first time to get it into a Vic. It costs £14.99 from Reading-based Audiogenic.

- Getting started 5
- Value 9
- Playability 8

Bug-Byte's advantage is on the price side but it has also done away with the over-used notion of chess levels.

It also offers a menu enabling you to change how far the computer looks ahead, list out the moves made, set up chosen positions or save the current position.

The tape loaded first time everytime but you need a full extra 16K's worth of memory to play it.

The Bug-Byte's display was the least impressive with the King and Queen symbols initially confusing.

The program gets around the need for levels by letting the player input a three figure number from 0 to 9.99.

The number before the decimal point is the moves it looks ahead, the number after refers to the number of moves the computer will consider at each play.

Playing the Sicilian Defence this program also went "out of book" after two moves.

From Liverpool-based Bug-Byte at £7.

- Getting started 9
- Value 7
- Playability 5

SUPERMARKET

ATARI V.C.S. ENTHUSIASTS

New Cartridges Cut Price
(Pacman/Defender £26.50)

PLUS Second Hand Service —
Buy and Sell

PLUS First Class Hire Service

S.A.E. full details:

MELRICA AGENCIES

271 Stanstead Road,
Bishop's Stortford, Herts, CM23 2BT.

ATARI For Atari: Attack Force (32k) Cavos G R & Lunar Lander Anti Matter Hazard Xosact Any 3 for £3	VIC For Vic: Cassette 1 — Scramble 19.5k; Tank Battle 19.5k; Maze Trail Cassette 2 — Asteroid Battle; Tank Battle 3.5k; Sub Attack Each cassette for £3
--	--

Cheques P/O payable to: **A. Goacher**,
16 Mostyn Street, Dukinfield SK16 5JS.
Send SAE for details. Tel: 061-338 4167

BBC MICRO: Landfall + Serpent

LANDFALL: Decent simulator with full
cockpit graphics. Very challenging and not for
the fainthearted.

SERPENT: Eat or get eaten in this frantic maze
game. Totally addictive.

Both on one tape (32K OS 0.10). **£6.50**

ZX SPECTRUM: Sheepwalk

SHEEPWALK: You may laugh, but it's more
difficult than zapping aliens! The one you
haven't seen before. Runs 16K. **£3.25**



Cheques and POs to: **GT Software**
8 Bull Street, Potters, Sandy, Beds.

ATARI OWNERS

"PAGE 6" is the UK's first Atari
owner's magazine.

Issue 1 available now.
Single copy 65p.

Subscription (6 issues) £3.75

Send to: **PAGE 6, 18 Underwood Close,**
Parkside, Stafford.

Cheques should be payable to B.U.G.



COME AND SEE OUR
WIDE RANGE OF GAMES FOR
DRAGON 32 & MZ80A K

SEIKOSHA PRINTERS £210
Inc VAT

3rd Floor, 20/28 Whitehorse Road,
Croydon, Surrey CR9 2HQ

VIC GAMES COMPENDIUM 1

- | | |
|----------------|--------------|
| 1 Fishing | 6 Droptop |
| 2 Target Blast | 7 Demolition |
| 3 Deathtrack | 8 Hamurabi |
| 4 Budget Catch | 9 Duck Shoot |
| 5 Air Attack | 10 Execution |

HI-RES COLOUR GRAPHICS AND SOUND

10 GAMES
ONLY **£5**

Molesoft,
43 Hillcrest Drive,
Beverly, HU17 7JL

DRAGON 32 SOFTWARE

Original adventure games on cassette.
 DO4 Haunted House £3.95
 DO5 Treasure Quest £3.95
 DO6 Forbidden City £4.95
 DGP Pharaoh's Curse £4.95

All prices include p&p. Send s.a.s. for full list.

APEX TRADING LTD (Dept. CVG)
 115 Crescent Drive South, Brighton BN2 6SB.
 Tel: 0273 36894 Access/Bartcard welcome

INTRODUCING A NEW CLUB FOR AMAS 32

Atari/VIC/Apple

48K RAM FOR ATARI 400: £68 inc VAT!
 (OR £108 IF YOU KEEP YOUR 16K RAM)
 UP TO 25% OFF VIC-20 SOFTWARE!
 UP TO 15% OFF APPLE II SOFTWARE!
 UP TO 25% OFF ATARI SOFTWARE!

(LOW-COST HARDWARE — CALLERS ONLY)
 MAIL ORDER: £30 C/P PER ORDER
 TEL: 01-647 1713
 478 COMPTON STREET

SPECIAL CHRISTMAS OFFERS FOR THE SPECTRUM AND ZX81

SPECTREK — A fantastic real time adventure in deep space for the 48K Spectrum. Travel between star sectors and destroy the Klingons by phasers or photon torpedoes. Features include on-board computers, damage reports and long range sensors. Only £5.

DEATH STAR ATTACK & MEMORY MATCH — Two programs for the 16K ZX81. One a test of skill and speed and the other a test of memory. Both terrific fun and both on one cassette for only £5.

Send cheque/P.O. to: **SATELLITE SOFTWARE LTD., BROCKHAM, HYDE LANE, DANBURY, ESSEX.**

MZ80K

HELICOPTER RUN. Moving landscape. A game of rescue, attack and defence. £4.50.

DUELLIST. An interactive program. Duels using swords or pistols for one or two players. Various levels of difficulty. £6.00.

Both games £10. Prices include postage.
 C. I. P. HAYERS, 17 Rectory Road, Wokingham, Berks, RG11 1DL. Tel: (0734) 783899.

ATARI 400/800 OWNERS

A comprehensive library of cassettes, cartridges, discs.

Scores of games and adventures etc., for you to hire for your Atari Home Computer.

Send SAE for details to:

MIDLAND GAMES LIBRARY

46 Read Way, Bishops Cleeve, Cheltenham, Glos.

TEXAS TI99/4A SOFTWARE

Quality software on cassette, giving excellent value for money. Our most popular games are listed below.

Send s.a.s. for complete list. All prices include p&p.
 3-D Maze/Towers of Hanoi £3.95
 Sorcerer's Castle/Lunar Lander £3.95
 Haunted House/Wumpus £3.95
 Treasure Quest/Four in a Row £3.95
 Forbidden City/Mastermind £3.95
 Pharaoh's Curse/3-D On and Xs £3.95

APEX TRADING LTD (Dept. CVG)
 115 Crescent Drive South, Brighton BN2 6SB
 Tel: 0273 36894 Access/Bartcard welcome

SOFTWARE REVIEWS

MASTERING THE ROGUE ROCKS

ASTEROIDS

Asteroids became one of the craze games of the early 1980's after the worldwide successes of such mega-games as Space Invaders and Galaxians.

It is considerably more difficult than those earlier games, where you had really only two controls to worry about. Asteroids added hyperspace, thrust, rotate left, rotate right and fire.

The game places you in control of space ship being bombarded by a shower of meteorites that come at you relentlessly from the four corners of the screen.

Using your controls you must spin your ship around to shoot the asteroids.

You can also dodge in front or behind the rocks using the thrust button.

If things get a little too hot and a collision seems certain the hyperspace button will make you momentarily disappear and then replace you at random on the screen. But this could prove as dangerous

keyboard overlay which, although it seems just like a gimmick, is actually quite useful in Asteroids-type games where you have up to five controls to concentrate on.

My main criticism of Meteor Storm is that the thrust button has inertia, causing you to drift helplessly towards an asteroid, frantically rotating and thrusting.

Sinclair's official software writers, Psion, entered the field with Planetoids. This is not as close to the arcade game as the Quicksilver version though the graphics are no less impressive for this.

Planetoids had the best fire mechanism of the three games tested. The missiles could be fired in quick succession and reached their targets swiftly.

The final version tested was Meteoroids



from the new software writers — Softek.

This was not as good a version of the game as the others played. An admirable attempt had been made to simulate the rock-like texture of the asteroids but this did not work. They looked more like chewed up pieces of bubble gum.

There was really not much to choose between the other two — though for my £5 the Quicksilver version is marginally better because of its extra facilities and graphics.

Meteor Storm

● Getting started 5

● Value 7

● Playability 8

Meteoroids

● Getting started 5

● Value 5

● Playability 6

Planetoids

● Getting started 5

● Value 6

● Playability 7

ous as blasting away at the oncoming role!

Extra points can be earned by shooting down the mystery flying saucers which spin in and out of the asteroids.

We tested versions of the game so far available for the Sinclair Spectrum.

Meteor Storm was the closest to the arcade version of the three games we tested. The asteroids were represented as geometrical line drawings drifting weightlessly towards your ship.

The game displayed clear instructions on the screen and also showed you the value of the various asteroids and flying saucers on the screen.

All three games kept a running total of the high scores but Quicksilver's Meteor Storm took you a stage further than this enabling you to enter the initials of the top ten high scorers of the session.

This version also provides you with a

ICL GAMES PACK

AN IMPRESSIVE ARCADE CLONE

Once through this part you come across a series of airlocks. The only way to get past these is to shoot the middle out of them and manoeuvre your craft through the resulting hole.

● Playability 5

AIRSTRIKE

ATOM ADVENTURE I

12k m/c adventure. Can you solve the puzzle of the castle and obtain the key to the church or will you become a victim of "That MAN". Send £6.00 all inclusive to: **C. WEBSTER**, 17 Tanners Court, St Martins Close, Norwich NR3 3HB.

**South London's Largest
Micro Computer
Centre**

VISION STORE

COMMODORE VIC 20

5K
£137.95*
Inc. basic.

5K + 16K
£185.95*
Inc. basic.



*includes 5 Free programmes.

VIC Cassette **£44.00** VIC Disk Drive **£299.95**
VIC Printer **£229.00** New Low Price
16K RAM Pack **£49.95**

NEW Commodore 64, 64K Colour Computer **£345.00**

Main Commodore Dealer
for: New 500 series, New 700 series, Business Computers.

New Vic Software

Krazy Kong!	Escape (Labyrinth)	£6.99
Dodge Kong's barrel's as you	Dodge Cars	£6.99
climb the stairs.	Bomber	£6.99
STD VIC Joysticks. £6.99	Invasion	£6.99
Exterminator!	Raceway	£6.99
Blast the centipede while	Alien Parik	£6.99
dodging the spider amongst the	Quirk	£6.99
toadstools. Fast action.	Target	£6.99
STD VIC Joysticks. £6.99	Search	£6.99
Anti-platter-matter!		
Make space invaders look like	New EMI Cartridges	£24.95
childs play, superb graphics.	River Rescue	£24.95
STD VIC Joysticks. £6.99	Music Composer	£24.95
Vikman		
Choose one to three ghosts.		
STD VIC Joysticks. £6.99	Send for VIC price list.	

THE AMAZING ORIC - 1

Colour Computer

- ★ 40 Columns x 28 rows.
- ★ Microsoft Basic Language.
- ★ 8 Foreground + 8 Background Colours.
- ★ Built-In Sound Synthesiser.
- ★ High Res Graphics.
- ★ Teletext-Prestel Compatible.



16K Microsoft
Basic
32K Microsoft
Basic

Phone!

48K Microsoft Basic **£139.95**
8 Forti **£169.95**

Come in for a Demonstration.

Dragon 32K — Limited Stocks Available.
New Software coming in all the time.

Now available
EMI Submarine Commander, EMI Jumbo-Jet
Lender, incredible Games for Atari.

**3 Eden Walk Precinct,
Kingston-on-Thames, Surrey.**
Tel: 01-546 8974

VISION STORE

ATARI 400

16K
£199.95
Less Basic

32K
£249.95
Less Basic



Basic Cartridge **£34.90**

Atari 800 16K inc basic	£299.00	Atari 410 Cassette Drive	£49.00
Atari 800 48K inc basic	£469.95	Atari 810 Disk Drive	£299.00
		Atari 822 Printer	£199.95

Plus Daisy Wheel and Dot Matrix printers for the Atari range.

NEW Atari 400 Typewriter keyboard. Direct easy replacement for standard keyboard **£78.95**

New Atari Software

Shamus C/D	£21.80	Slime C/D	£21.80
Preppie C/D	£19.95	Rearguard C/D	£15.50
Beta Fighter C	£18.50	Micropainter D	£25.50
Mouskattack D	£31.50	Shooting Arcade D	£21.80
Hazard Run C	£21.50	Protector D	£21.80
Jumbo Jet Pilot Rom	£35.95	Nautilus C/D	£21.80
Golden Gloves C	£20.50	Chicken C/D	£21.80
Pacific Coast C/D	£21.80	Frogger C/D	£21.80
Highway Canyon Climber C/D	£21.80	Crush, Crumble, Chomp C/D	£22.95
Choplipter D	£25.50	Temple of Aposhai C	£30.95
My First Alphabet D	£29.95	EMI Darts C	£19.95
Rasterblaster D	£22.95	EMI Soccer Rom	£29.95
Submarine Commander Rom	£35.95	All Prices inc. VAT.	

Sinclair ZX81

£49.95

Cased typewriter keyboard **£29.95**
16K RAM **£29.95**
Printer **£59.95**



Over 900 software programmes always in stock.
We carry probably the widest range with continuous demonstrations.

We offer excellent part exchange deals or cash for your old machine.

Mail Order — send for our comprehensive list.

Instant Credit Available subject to status

Access/Barclaycard



ZX81 & SPECTRUM KEYBOARDS COMPLETE WITH LUXURY CASE FOR ONLY £37.95 INC. V.A.T.

These highly professional keyboards incorporate executive buttons similar to those used on top-quality computers. A repeat key facilitates entering of characters much faster than is possible with a conventional keyboard, thus making it particularly ideal for cursor control and erasing. Attractive black plastic moulded case. Supplied with 12" flexible ribbon cable for connection into your computer. *Not to be confused with toy keyboards currently on the market. Other attributes as reviewed by Tim Hartnell, ZX Computing/Interface.*



OTHER KAYDE HARDWARE/SOFTWARE

ZX81 4K GRAPHICS BOARD

The KAYDE Graphics Board is probably the best accessory yet. It fits neatly inside your ZX81. It comes complete with a pre-programmed 4K Graphics ROM. This will give nearly 450 extra graphics and with the inverse makes a total of nearly nine hundred.

The KAYDE Graphics Board has facilities for either 2K of RAM (for user definable graphics) or 4K of ROM (for 4K Tool Kit Chips that will be available shortly. All the graphics are completely software controlled therefore they can be written into your programmes. Here are a few examples:

A full set of space invaders
Puckman — Bullets, Bombs —
Tanks — Laser Bases and
Alien Ships
NO EXTRA POWER NEEDED

£29.95

16K GRAPHICS SOFTWARE

PECKMAN — The only true ZX version of the popular arcade game.

SPACE INVADERS — The best version available anywhere.

CENTPEDE — "In all I think this is the best presented moving graphic programme I've yet seen" — Phil Garratt, INTERFACE

£5.95 each

Graphic Software can only be used with a Graphics board

RAMPACKS... With a difference

Kayde Rampacks are exceptionally stable. They don't over-heat, lose memory, wobble or cause you to lose your program. They are fully compatible with all accessories and need no extra power, and therefore will run efficiently on existing Sinclair power supply. Simply plug them straight into the user port at the rear of your computer. Top quality massive add-on memory only:

£29.95 for 16K ZX81 Rampack and
£48.95 for 32K Spectrum Rampack

FLEXIBLE RAMPACK RIBBON CONNECTOR
only £12.95

16K 81 SOFTWARE

3D/3D LABYRINTH

— A cubit maze that has corridors which may go left, right, up and down. £5.95

4K Tool Kit full of utilities to aid the programmer in constructing and de-bugging E. PROM version for use with graphics ROM. £9.95

VIC 20 SOFTWARE

THE KAYDE VALLEY

OTHELLO

TWINKLE TWINKLE

KAYDE PECKMAN

APPOLO 8

SPACE ATTACK

PLUS MANY MORE

ALL £7.95 EACH

Vic 20 dealer

Overseas please add £2.50 p & p for all hardware and 75p for all software. All hardware comes fully built and tested and complete with a 14 day money back option. PRICES INCLUDE V.A.T.

SEND FOR A FREE CATALOGUE STATING TYPE OF COMPUTER.

KAYDE ELECTRONIC SYSTEMS LTD.

THE CONGE, GREAT YARMOUTH, NORFOLK NR30 1PJ

TEL: 0493 57867 TELEX: 975 247 CHATCOM G

FAST
IMMEDIATE
DELIVERY

TO: KAYDE ELECTRONIC SYSTEMS LTD,
DEPT.CVG, THE CONGE, GREAT YARMOUTH,
NORFOLK NR30 1PJ

PLEASE PRINT

Qty	Item	Item Price £	Total £

Please allow £1.50 P&P for all Hardware 50p for all software



DON'T FORGET YOUR CARD ALWAYS ORDER ON
THE TELEPHONE WITH YOUR CREDIT CARD.
DEALERS WELCOME.

*I enclose a cheque/postal order payable to KAYDE Electronic Systems Ltd. for £

*Please charge to my Access/Bankcard/Trustcard account no.

*Please delete complete as applicable.

Signature _____

Name: Mr Mrs Miss _____

Address _____

let the
DRAGON 32
fire your
imagination . . .



for only £199.50

Plus £5 Post & Packing

*No other computer offers
you all these features
at any price . . .*

- 32K RAM MEMORY
- PROFESSIONAL STANDARD KEYBOARD
- 1 YEAR WARRANTY
- 9 DISPLAY COLOURS
- 5 DISPLAY RESOLUTIONS
- EXCEPTIONAL GRAPHICS CONTROL
- 5 OCTAVE SOUND GENERATOR
- DIRECT MUSIC COMMANDS
- REAL-TIME CLOCK/TIMER
- MICROSOFT EXTENDED COLOUR BASIC
- PLUG-IN CARTRIDGES AVAILABLE
- CENTRONICS PARALLEL PRINTER PORT
- SOCKETS FOR JOYSTICKS
- SOCKETS FOR FULL CASSETTE CONTROL
- EXCELLENT CASSETTE FILE HANDLING
- COMBINED AUDIO/DATA INPUT FACILITY
- AUDIO OUTPUT VIA T.V.
- EXPANDABLE TO 64K RAM
- POWERFUL 6809E MICROPROCESSOR
- FREE 160 PAGE TRAINING MANUAL
- BRITISH MADE

Available now from:

ComServe

98 TAVISTOCK STREET, BEDFORD MK40 2RX.
TELEPHONE: BEDFORD (0234) 216749

In stock now
at Twickenham's
official BBC/Acorn
dealer & service
centre

Phone
01-891 1612

BBC

BUY BEST
BUY BRITISH
BUY THE BBC

MODEL A £299.00

MODEL B £399.00

plus all the extras:

Printers + Monitors + Disk Drives
+ Cassette Drives + Software + Books

**PLUS VIC-20 Cassette decks, games
cartridges, & tapes in stock!**



Always available - a wide range of micros,
software, printers, peripherals and books
- send SAE for latest lists

**TWICKENHAM
COMPUTER CENTRE LTD**

72 Heath Rd Twickenham Middle TW1 4BW (01-892 7895/01-891 1612)

Yorkshire
Microcomputers

INCREDIBLE VALUE

VIC 20 only £125
Commodore 64 only £260
Dragon 32 only £170

VIC C2W Cassette	£34.00	VIC 3K RAM Pack	£23.00
VIC 1540 Disk Drive	£250.00	VIC 8K RAM Pack	£35.00
VIC 1515 Printer	£180.00	VIC 16K RAM Pack	£56.00

10% Discount off all cartridges and cassettes from:

- ★ Commodore
- ★ Bug Byte
- ★ Audiogenics
- ★ Rabbit
- ★ Plus a great new game — CANNIBAL

Please phone for a full list of all the wide range of items we
stock.

All prices are exclusive of VAT.

Fast mail order service from:

Yorkshire Microcomputers,
28 Ramshill Road, Scarborough.
Tel: (0723) 78136

E.T.A.

A DEFENCELESS EXTRA-TERRESTRIAL HAS CRASH-LANDED ON EARTH. ONLY YOU CAN HELP HIM. E.T. IS LOST, AFRAID AND IS SUFFERING FROM AMNESIA. YOU MUST DISCOVER WHAT HE LOOKS LIKE. HELP HIM TO REMEMBER HIS NAME AND FIND HIS SPACE CRAFT BEFORE THE WILD DOGS AND EVIL MILITARY CATCH HIM.

FULL CARTOON GRAPHICS, COLOUR AND SOUND. "E.T.A." - THE PROGRAM THAT COMBINES ADVENTURE GAMING WITH ARCADE ACTION - WITH A NEW CHALLENGE EVERY TIME YOU PLAY. FROM THE CREATORS OF "PIPIANIA".

16k 48k Sinclair Spectrum; £5 (incl.)



AUTOMATA Ltd. (C)
65a Osborne Road,
Portsmouth, PO5 3LR

hot stuff! DRAGON 32



for only £199.50

Plus £5 Post & Packing

*I have a burning desire for the
DRAGON 32 - Please send me:*

☐ **DRAGON 32 COMPUTER** - £199.50

☐ **DRAGON PLUG-IN SOFTWARE**

- | | |
|--|--|
| <input type="checkbox"/> Berserk - £19.95 | <input type="checkbox"/> Ghost Attack - £24.95 |
| <input type="checkbox"/> Meteoroids - £19.95 | <input type="checkbox"/> Cave Hunter - £19.95 |
| <input type="checkbox"/> Cosmic Invaders - £19.95 | <input type="checkbox"/> Tube Frenzy - £19.95 |
| <input type="checkbox"/> Starship Chameleon - £19.95 | |

☐ **DRAGON CASSETTE SOFTWARE**

- | | |
|---|--|
| <input type="checkbox"/> Special selection 1 - £7.95 | <input type="checkbox"/> Special Selection 2 - £7.95 |
| <input type="checkbox"/> Quest - £7.95 | <input type="checkbox"/> Graphic Animator - £7.95 |
| <input type="checkbox"/> Computavoice - £7.95 | <input type="checkbox"/> Mazercise - £7.95 |
| <input type="checkbox"/> Madness & Minataur - £7.95 | |
| <input type="checkbox"/> Examples from manual - £7.95 | |

☐ **DRAGON PERIPHERALS**

- | | |
|---|---|
| <input type="checkbox"/> Pair of Joysticks - £19.99 | <input type="checkbox"/> Cassette Cable - £7.95 |
|---|---|

(Add £5 Post & Packing for DRAGON 32 - £1 for accessories)

*Please debit my Barclaycard/Access account with
I enclose Cheque/P.O. for

£

*Delete as applicable

Name:

Address:

CVG

ComServe

98 TAVISTOCK STREET, BEDFORD MK40 2RX.
TELEPHONE: BEDFORD (0234) 216749

GAMES CENTRE

**THE LARGEST SELECTION
OF GAMES IN THE WORLD**

Choose from the wide
range of

**ATARI
COMPATIBLE
SOFTWARE**

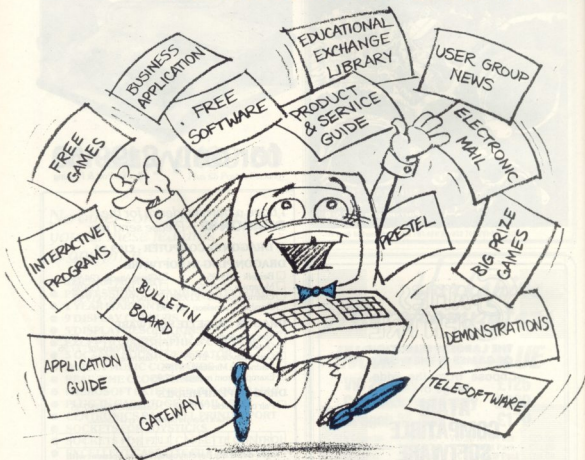
Also in stock
**SINCLAIR ZX81 and
coming soon SPECTRUM**

and a wide range of
independent
SOFTWARE

Main Computer Branches: 22 OXFORD STREET, London W.1.
439 OXFORD STREET, London W.1.
52 WESTERN ROAD, BRIGHTON.

Also at: 184 REGENT STREET, London W.1.
254 REGENT STREET, London W.1.

MORE IDEAS THAN MORE PROGRAMS THAN LESS MONEY THAN



**PROGRAMS FOR EDUCATION, HOME, BUSINESS, AND GAMES – FOR
SINCLAIR, BBC, RESEARCH MACHINES, APPLE, COMMODORE,
ACT SIRIUS, TRS-80, IBM, ICL, and more each month. . .**

HOW THE MICRONET 800 SERVICE WORKS:

Most micros connect by a standard DIN plug and coaxial cable to an adaptor. They're portable, so you can use the system wherever you put your computer and telephone.



Simply dial Miconet's number and enter your subscriber number into the keyboard. A 'welcome to Miconet' message appears on the screen. You're on-line to one of the world's largest databases.



PRESTEL

MICRONET 800's

thousands of ideas – packed pages – games, education, business software, club news and information.

When you have all the information you need – or you've finished 'downloading' software to your computer's memory – just switch off the telephone link at your keyboard and replace the receiver.

AN A THINK-TANK. AN A SOFTWARE HOUSE. AN YOU'D EXPECT.

Whether you bought your computer for games, business, or education, you can spend a lot of time wondering what to do with it. And then spend a lot of money on packaged games and applications software.

NOW you can bring your computer to life – economically – by joining the amazing new MICRONET 800 service: a vast database with hundreds of FREE games, plus business and education software, computer news, special offers and 'big prize' opportunities for you to compete against the system – and win!

MICRONET is packed with ideas and information. And there's no waiting – you get programs straight down the phone line! Updates on operating systems... school and college programs

...gobble man... invaders... business packages. They're constantly renewed. And hundreds of them are free: you simply turn on your micro, dial up MICRONET 800 and LOAD.

Sounds expensive? Here's the surprise!

All you pay for is a low-cost adaptor (in most cases just £49) to link your computer to your telephone, plus a MICRONET 800 subscription of about £1 per week. Then, via your computer and telephone line you will be able to access over 30,000 ideas-packed 'pages' of the MICRONET 800 service, and call down the software you want to your own computer! Look at just a FEW of the services already available on Micronet for you to call on:

- **Free Telesoftware:** Indexed by subject and by name of micro, a huge selection can be loaded down onto your computer.
- **Educational Exchange Library:** Schools and colleges are already preparing to display programs written by students and teachers, so many can benefit from them easily and economically.
- **Applications Guides:** Quick-reference guide by subject and by micro name shows you available applications software. You can move from the guide to further details held on the system if you wish.
- **Demonstrations:** Check through the features of the software packages that interest you – privately and without obligation. Order only if you're sure it's what you need.
- **Purchase 'Downloadable' Software:** Many 'telesoftware' programs can be bought from the system and loaded down direct to your micro. But

don't worry – there's plenty of warning if any MICRONET service you're planning to use carries a charge.

- **Electronic Mail:** A mailbox service on Prestel allows you to exchange messages with other Prestel or Micronet users. Messages are held securely and only you can collect them.
- **Bulletin Board:** For an additional subscription you can operate your own bulletin board – club news, for example, like tips, swap-shop for second-hand items and so on.
- **Phone-In:** If you're away from your computer but need to send a message to another Micronet user – call the Micronet 800 service by phone and we'll send the message for you.
- **Prestel:** Over 200,000 pages of information on British Telecom's established service. Facts and advice on finance, business, entertainment, features

and even direct bookings for travel, holidays, etc.

- **Product and Service Guide:** A constantly updated reference source – covering product comparisons, software reviews, dealership and price details and all the 'best buy' information.
- **Action Advertising:** Includes features, just like a magazine, including jobs and classified ads. If you've read an article that interests you, through MICRONET you can find out about the manufacturer, the dealers, the prices, and even order the product via your micro!
- **User Group News:** The Amateur Computer Club and many others like AICC, BASUG, ICPUG, TUG, TRS 80 UG, will maintain their news and reference service on Micronet.
- **Big Prize Games:** Micronet offers a range of games and quizzes to keep you entertained and involved – and there'll be big prizes too!

SOUNDS FANTASTIC? THAT'S JUST THE START!

MICRONET 800 is a completely new service and we'll be adding to it all the time. Find out more about what Micronet 800 has in store for

you: return this coupon TODAY and we'll send you a FREE FACTS FOLDER on Micronet 800 services and details of how you can join!

micronet
800

**IT BRINGS YOUR
COMPUTER TO LIFE!**

Send to: MICRONET 800, Petersham House, 57a Hatton Garden, London EC1B 1DT.

☐ Yes, I am interested in the MICRONET 800 service. Please keep me in touch with developments and send me details of the low-cost Micronet 800 adaptor.

☐ I am interested in earning money on software I develop for the system.

I am interested in: Home uses ☐ Business uses ☐ Educational uses ☐

Name _____

Address _____

Telephone _____

Type of computer _____

POST
TODAY

These are high quality, very reliable, industry standard disk drives. These can be used as single sided/single density, double sided/single density or double sided/double density depending on the host computer disk interface. Compatible with most micro-computers, e.g. VIDEO GENIE, ATOM, TRS80, BBC COMPUTER, SUPER BRAIN, NASCOM etc etc. If used as double sided/double density then the storage capacity is 3.5 MEGABITS; DRIVE (unformatted); track density is 48 TPI and can daisy chain up to 4 drives; 90 day warranty.

A black and white photograph of a desktop electronic calculator. It has a dark, rectangular body with a light-colored paper tape emerging from the top. On the right side, there are several buttons and a small display area. The calculator is shown from a slightly elevated angle.



* Dniester River Line 48K Cass
£13 + VAT = £14.

ZX81 GAMES

from

J.K. GREYE SOFTWARE LTD

THE NEW GENERATION SOFTWARE HOUSE

"Without question the finest machine code games available today"..... J.N. ROWLAND Product Manager for W.H. SMITH.

GAMESTAPE 1 for 1K only £3.95
10 Games incl. ASTEROIDS, UFO, CODE, BOMBER, GUILLOTINE, KALDESSCOPE, etc.
PROBABLY THE BEST VALUE IN TAPE AVAILABLE.

W.H. SMITH

KALDESSCOPE

We've done in 1k, games which some of our competitors require 16k to do!



GAMESTAPE 2 for 1K only £3.95
"STARFIGHTER" Super machine code Space Battle. Set against a background of twinkling stars, with stunning explosions - if you can hit the enemy!
PYRAMID Can you move the Pyramid? Make a mistake and it will collapse! A Thinkers game.

ARTIST The ultimate Graphic Designers aid. 8 Directions, 10 Memories, SAVE, COPY, RUBOUT, CLS, etc.

W.H. SMITH

CATACOMBS

GAMESTAPE 3 for 1K only £4.95
"CATACOMBS" A Multi-Level Graphics Adventure. Each level can contain up to 9 Rooms, 8 Passages, 7 Monsters, Food, Gold, Traps, Phantoms, an Exit (to the next level), and there's an infinite number of levels!
NOTE - This is NOT one of the necessarily limited text Adventures as sold elsewhere.

"An excellent additive game which will keep you amused for hours"..... **COMPUTER & VIDEO GAMES**



GAMESTAPE 4 for 1K only £4.95
"3D MONSTER MAZE" The Game to Top All Others. Unbelievable Graphics! Can you find your way through the Maze? The EXIT is there somewhere, but then so is a T-REX, and its after YOU! All in 3D the T-REX will actually run towards you in full perspective! You've never seen anything like this before!

"3D MONSTER MAZE is the best game I have seen for the ZX81"..... **COMPUTER & VIDEO GAMES**

"If I had to choose just one programme to impress an audience with the capabilities of the ZX81, then J.K. Greys's 3D MONSTER MAZE would be the one without doubt!"
..... **ZX COMPUTING**

"Brilliant, brilliant, brilliant"..... **POPULAR COMPUTING WEEKLY**

W.H. SMITH

3D DEFENDER

GAMESTAPE 5 for 1K only £4.95
"3D DEFENDER" The Ultimate Space Game. For Fast Machine Code 3D version of the Arcade favourite. You have to save your home planet from the marauding Alien Spacecraft. This is all in 3D, your viewfinder shows you the view out of your fighters cockpit window. The backdrop moves when you turn, or fly up or down (8 flight directions), just as if you were really flying it! But then YOU ARE! The Enemy Saucers will actually zoom towards you in 3D, and shoot you if you let them! Your display includes Score, Shield Strength, Altitude, Proximity, Forward Radar and your viewfinder, which shows your rotating home planet, backdrop of Stars, Meteors, Explosions, Plasma Blasts, your Photon Beams, up to 4 Enemy Saucers and of course it's all in full 3D!

"Another 3D winner"..... **SINCLAIR USER**



GAMESTAPE 6 for 1K only £1.95
"BREAKOUT" Super Fast Full Screen Display Game. Your all time favourite with an added twist! See how much Money you can win and watch the pounds convert to Dollars. All in Machine Code for Fast Action with 3 Speeds, 2 Bat Sizes and three angles of rebound! The best BREAKOUT around and at this price you can't go wrong!

"The best of its kind"..... **WHICH MICRO & SOFTWARE REVIEW**

GAMES MARKED * INCL. MACHINE CODE.

Prices include VAT and U.K. P. & P.

(Add appropriate Postage on Foreign Orders). Cheques/P.O.s to

J.K. GREYE SOFTWARE LTD

Dept VG16, Brendan Close, Oldland Common, Bristol BS15 6QE

CREDIT CARD SALES: FOR INSTANT DISPATCH, BY PHONE ONLY

TEL 01-930-9232 (9 am - 7 pm)

If you prefer to see before buying, our range of **GAMESTAPES** are stocked by the following stores.

BUFFER MICROSHOP	374A Streatham High Rd., London SW16
GAMER	24 Gloucester Rd., Brighton
GEORGES	89 Park St., Bristol, Avon
MICROSTYLE	29 Belvedere, Lansdown Rd., Bath, Avon
MICROWARE	131 Melton Rd., Leicester
SCREEN SCENE	144 St. Georges Rd., Chesham, Glos
W.H. SMITH	Over 200 Computer Branches
ZEDXTRA	5 School Lane, Kinson, Bournemouth, Dorset

TRADE & EXPORT ENQUIRIES WELCOME

Three New Video Games from PCP For Young and Old Alike

FOR VIC



HEADBANGER

Theme: Headbanger enjoys being hit on the head by hammers falling from the sky but collapses if hit by too many without an aspirin hitting as well. At the same time Headbanger tries to grab money bags. A brick wall on the screen is gradually knocked down by the hammers as the player attempts to strike Headbanger and to reach the money bags.

Action: Points for head collisions and money bags, plus 'pain meter' for head-to-hammer or aspirin-to-head collisions and for money bags stowed.

Price: £9.95 incl. V.A.T.

Rox

Theme: Rocks fall from the sky and the player tries to blast them with missiles before they hit the ground.

Action: Scores are awarded for hits and 'secret bonuses'.

Price: £5.95 incl. V.A.T.

3D Maze

Theme: The player attempts to escape from the maze which is shown in perspective view.

Action: Ratings are scored for the time taken to find the exit from the maze.

Price: £4.95 incl. V.A.T.

● Dealer enquiries welcome.

PERSONAL COMPUTER PALACE



**4-6 CASTLE STREET
READING, BERKS
Tel. (0734) 589249**

Please send me (Qty) Headbanger @ £9.95 (inc. V.A.T.)
..... (Qty) Rox @ £4.95 each (inc. V.A.T.) (Qty) 3D Maze
@ £5.95 each (inc. V.A.T.) Add 50p for postage and
packing on each order. I enclose my cheque/postal order
No made payable to Personal Computer
Palace or debit my Access/Barclaycard No.

Name (BLOCK CAPITALS PLEASE)

Address



97 Defoe Drive,
Park Hall,
Stoke-on-Trent,
ST3 5RS.

WE PROUDLY PRESENT THESE ALL NEW PROGRAMMES
FOR THE FOLLOWING MACHINES:

1 GAMES PACK 1 FOR ZX81 — 1K OR MORE

This exciting all machine code games pack includes such favourites as INVADERS, BREAKOUT, SQUASH as well as MESSAGE WRITER, DEMON DRIVER and a superb version of AIR SEA RESCUE. **SPECIAL PRICE £4.75 inc VAT + P&P**

2 GAMES PACK 2 FOR ZX81 — 1K OR MORE

If you thought that Games Pack 1 was incredible this pack will amaze you. All machine code versions of JUMP JOCKEY, ASTEROIDS, INVADERS (Pt 2), STUNT CYCLE, OXO, ENTERPRISE and SKETCH programmes. All Games Pack games are fast and exciting. **SPECIAL PRICE £4.75 inc VAT + P&P**



BBC MICROCOMPUTER A* & B
*with 32K

We can now offer high quality Tensal cassette recorders for use with most micros i.e. ZX81, Spectrum, BBC, Jupiter Ace, Acorn Atom etc. at an unrepeatable price of £22.00 inc VAT + P&P.

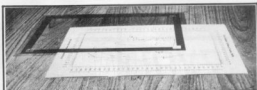
P&P on all items 50p.

Watch this space for Spectrum, Vic, Jupiter Ace, Commodore 64 programmes. All cheques/P.O. to DATABASE SOFTWARE.

Dealers wanted nationwide — Tel (0782) 330552

MAIL ORDER ONLY. EXPORT ORDERS WELCOME.

ALL PROGRAMS AND GOODS GUARANTEED 1 YEAR.



VICTAGRAPH-PLOT WINDOW

The above photographs show VICTAGRAPH PLOT WINDOW and a full demonstration RUN on ATARI 400. GR 8. Have you got PLOT, DRAW, DRAW TO or similar to an absolute co-ordinate?

Could you draw the above screen display?

Without using graphpaper?

Place your drawing in the VICTAGRAPH and you are ready to plot all the points, using the movable window mask and easy to read scale. Plot 0,0 in each corner and a fully adjustable window to 320,200 . . . working area 13in x 8in total size 17in x 12in approx. NOT SUITABLE FOR ZX SPECTRUMS DRAW.

Total price £7. Cheque/PO to VICTA CERAMICS

UK ONLY

UK ONLY

VICTA CERAMICS (CVG)

6a BOW STREET, RUGELEY, STAFFS WS15 2PT

Electronics & Computing

MONTHLY

Electronics & Computing Monthly

is Britain's FIRST electronics and computer applications magazine.

Electronics & Computing Monthly

is designed for the technically aware computer enthusiast.

Electronics & Computing Monthly

has a unique blend of theory, projects, software and product reviews, plus science and general features on a wide variety of topics.

Electronics & Computing Monthly

keeps you fully informed on changes in computer technology.

Electronics & Computing Monthly

is at your
newsagent
now.



SIR COMPUTERS LTD

Agents for Torch and Acorn Computers

BBC MICROCOMPUTERS — DIRECT FROM STOCK

Model A	£299.00
Model A + 32k Ram + VIA	£329.00
Model B	£399.00
Upgrade of your model A to model B	£100.00
BBC single disc drive	£249.00
BBC dual disc drive	£389.00
(suitable disc drives also in stock)	

TORCH Z80 disc pack (800k, dual disc drive with CP/N compatible Z80 second processor for the BBC model B; interfacing included)	£895.00
--	---------

EPSON MX80 1/1 type free	£370.00
BMC 14in. colour monitor	£260.00
Black & Green Monitor	£85.00

All current Bug Byte and Program Power Software for a BBC micro now in stock.

All prices are inclusive of VAT.

Please add £7.50 for delivery by Interlink.

SIR COMPUTERS

38 Dan-y-Coed Road
Cyncoed, Cardiff
Tel: (0222) 759015

VIDEO GAME T-SHIRTS

Superb 5-colour screen-printed video game motif on quality poly/cotton T-shirt. Imported from U.S.A. where they are this year's fashion craze. Available for first time in U.K.



SIZES

Kids: 10-12 (27"-29"), 14-16 (30"-32").

Adult: S, M, L, XL.

MOTIFS/T-SHIRT COLOUR

Pacman/White, Pacman/Tan, Asteroids/Black, Missile Command/Blue (not 10-12), Space Invaders/Black (not 10-12), Donkey Kong/White, Tempest/Black (not kids or small), Frogger/White.

ONLY £4.50 (Inc. P&P) **£4** (Inc.) Kids Sizes.

State alternative motif if possible.

Orders despatched within 3 days.

Cheque/P.O. to:

NEIL HOW, 3 VICTORIA ROAD, LEAMINGTON SPA, WARWICKS.

SPECTRUM NEWS FROM



Just received your ZX SPECTRUM? No point in looking any further—we have the products you need at the prices you expect.

SP48

32K Memory extension
(giving total of 48K. Upgradeable to SP80)

£25

SP80

64K Memory extension
(giving massive 80K)

£50

Both the SP48 and the SP80 fit inside the Spectrum case, are fully compatible with all Sinclair add-ons (ZX Printer, RS232, Microdrive etc.), are very low in power consumption, require no soldering, are easy to fit and remove and carry our full guarantee.

Transfer your ZX81 BASIC and machine code programs and data onto your Spectrum in minutes with the fabulous new

ZX SLOWLOADER £10

SOFTWARE
PRODUCT OF THE YEAR

This superb piece of software enables your Spectrum to LOAD programs from ZX81 tapes and automatically converts them to 'Spectrum' ready for normal Spectrum SAV/Erng.

Send I.A. for **FREE** catalogue to:
East London Robotics, Friends House, 14 Denmark Close, East Ham, London E6 4BT. Tel: 01 471 3308.
Please include VAT. Please tick if you require VAT receipt ☐

ORDERS & ENQUIRIES

Product name	Quantity	Price	P&P
I enclose cheque/PO payable to East London Robotics for TOTAL £			
Name: Mr/Ms/Ms/Ms	Address:		

EAST LONDON ROBOTICS—THE OPTIMUM SOLUTION



IJK Software

A FANTASTIC RANGE OF

• LATEST CASSETTES •

CASSETTE 13 - HYPERDRIVE

A new, very addictive machine code arcade game. Guide your laser tanks around the network of passages destroying the drone Aliens—but beware, evil OTTO lies in wait!
Only £5.95 inc. Model B (or A+32K)

FOR MODELS A AND B

ONE: STAR TREK (B&B Galaxy, Klingons, Phasers etc.) and CANDY FLOSS, the tremendous new game everyone is talking about!

Only £5.95 inc.

TWO: HANGMAN, MYSTOGRAM, DICE, BEETLE, GRAND NATIONAL and MUSIC.

Only £3.95 inc.

THREE: MUTANT INVADERS (arcade game). Can you destroy the Mutants before they destroy you with their radioactivity. BREAKOUT (arcade game). Superb version, 6 skill levels, 1 or 2 players.

Only £5.95 inc.

EIGHT: Model A invaders. A superb full feature machine code teletext colour graphics version of the popular arcade game.

Only £4.95 inc.

FOR MODEL B ONLY (A+32K)

FOUR: BEEP-BEEP. Excellent version of the popular 'Simon' game. Very much enjoyed by children, great fun at parties! Includes the choice of the number of colours and sounds.

Only £3.95 For model B (or A+32K)

FIVE: BEEMUNCH (arcade game). Our version of the 'Pacman' game. Tremendous version containing multi-ghosts, tempting fruits, superpoints, screams etc.

Only £5.95 inc.

CASSETTE 14 - STRATOBOMBER

Another new highly colourful machine code arcade game. Can you keep the enemy fleet at bay long enough to destroy the nuclear reactor of the rogue Star Ship before it destroys your home planet? Superb Graphics.
Only £8.95 inc. Model B (or A+32K)

SIX: SUPER HANGMAN. The special feature is the high-resolution animated man. Marvel at the detail of his clothing and witness his impatience! Contains many categories.

Only £3.95 inc.

SEVEN: 3D MAZE. Battle against the clock to escape from the maze, with the computer showing your view in 3-D each step you take!

Only £3.95 inc.

NINE: Contains Model B invaders. A superb full feature adaptation of the arcade 'Space Invaders' game. Play normal game of choice from the many options.

Only £8.95 inc.

TEN: Wordpro. Cassette based word processor for Epsom or Seikosha printers. Features right hand justification, alter, delete, insert etc., etc. Complete with manual.

Only £9.95 inc.

ELEVEN: ATLANTIS. The superb fast action underwater arcade game. This game features all the usual Atlantis/Scramble features - guide your submarine Nautilus along the undersea landscape to reach your ultimate goal - Atlantis.

Only £6.95 inc.

TWELVE: FLAGS. This model B (or A+32K) program uses hires colour graphics to display world flags and tests your geography at the same time! Have fun while learning.

Only £3.95 inc.

BBC
Micro
Games

SPECIAL
XMAS OFFER
Deduct £2.00 from
total if you order
3 or more cassettes

CASSETTE NINE
Actual Screen
Photo



IJK Software

55 FITZROY ROAD, BISPHAM, BLACKPOOL, LANCASHIRE.

HENRY'S

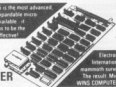
COMPUTER KIT DIVISION

404 EDGWARE RD, LONDON W2 1ED
TEL: 01-402 6822

RETAIL SALES
& DEMONSTRATIONS

MICROTAN 65

Microtan 65 is the most advanced, powerful, expandable micro computer available - it also happens to be the most cost effective!



HALF PRICE OFFER
KITS LIST PRICE
£79.95 incl.

OUR PRICE £39.95
incl. post paid
BUILT UNITS
£49.95 incl.

STARTER KITS

MICROTAN 65 CONTENTS

High quality, plated mini hole printed circuit board, solder resist and silk screened component identification. 6502 microprocessor, 1K monitor (TANBUG). Now with "V" Bug, 1K RAM for user programme, stack and display memory. VDU alphanumeric display of 16 rows by 32 characters. Microtan 65 system file binder. 136 page, bound, users hardware software manual with constructional details and sample programmes. Logic and discrete components to fully expand Microtan 65. The Microtan 65 kit has won widespread acclaim for its superb presentation. We pay attention to detail!

Electronic Today
International held a
smooth survey of kits
The most Microtan 65
WIND COMPUTER CLASS!

**DRAGON-32
COMPUTER**
£199.00
inc.

Sinclair ZX81
in stock £49.95

DELIVERY EX-STOCK POST PAID MAIL ORDERS to:
11/12 Paddington Green, London W2.

NEW FROM MR MICRO

V.S.L. — You may be familiar with some of the many tune playing programs available for the Vic but we now offer something which takes the Vic to new musical and sound heights. **VIC SOUND LANGUAGE** or **V.S.L.** gives full control over the sound envelope of its attack, sustain and decay and volume. In fact, V.S.L. converts the Vic into a sound synthesizer. Once loaded the new fully tokenized command can be incorporated into other programs to make sound effects effective and music musical. The package includes versions for any expanded VIC, sample performances and instruction manual. **£10.95 inc VAT.**

VIC TINY BASIC COMPILER — produces true 6502 code. Sub-set of BASIC supports all floating point operations. Compiler listing optional if you have memory (8k exp). Req. 3k-8k expander. **£15.95 inc VAT.**

Mr Micro are pleased to announce the following new releases in our popular Vic Value Series.

VIC VALUE NO 2

Alphasquare, Switchback
Rayflektion, Micromind — **£6.95 inc VAT**

VIC VALUE NO 3

2 player chess and chess clock, Joygen
Alien Scanner, Martian Defence — **£6.95 inc VAT**

Send SAE for our latest catalogue. For 24 hour telephone ordering service with Access or Visa ring 061 728 2282. Or send cheque/P.O. to **MR MICRO LTD, 69 PARTINGTON LANE, SWINTON, MANCHESTER M27 3AL.**

WE ARE NOW A MEMBER OF THE SPECTRUM COMPUTER GROUP. OUR RETAIL SHOP IS NOW OPEN. WE LOOK FORWARD TO SEEING YOU THERE.

NEW for your Spectrum Masterchess

the program
for the
real player!

from
MIKRO-GEN

the leaders
in ZX games



EASILY ONE OF THE MOST POWERFUL
CHESS PROGRAMS AVAILABLE

The makers of the original ZX Chess have now produced the most adventurous and enjoyable chess program you can buy for your Spectrum **ONLY £6.95**

Ten levels of play + graphic display of board + can change sides or level in midgame + set board to any position + scrolling history of moves + copy display + history to printer at any time + can save game at any point + displays your moves and the computer's + PLUS tournament-style Chess Clock on reverse! for 48K only.

Other great ZX programs from Mikro-Gen:

Space Invaders ★ Breakout ★ Bomber ★ Scramble ★ Frog
Paxman ★ Sorcerer's Castle ★ DeBug All on cassette, with story case
Write for full details of the Mikro-Gen range of programs and software available from local stockists or direct from the manufacturers (please make cheques/P.O.s payable to Mikro-Gen and add 40p post & packing. Suppliers of Software to Sinclair)

MIKRO-GEN

24 Agar Crescent Bracknell Berks RG12 2RX Tel: Bracknell (0344) 27317

Electronequip

(Authorised BBC Dealer and Service Centre)

BBC1	BBC Micro Model A	299.00
BBC2	BBC Micro Model B	399.00
BBC3	BBC Model A Micro with 32K	338.30
BBC4	BBC Model A Micro 32K & VIA	345.00
BBC21	Upgrade Model A to B	115.00
BBC27	Disc Upgrade for BBC B	92.00
BBC30	14" Colour Monitor for BBC	287.50
BBC31	BMC 14" Colour Monitor	298.75
BBC33	BMC12A 12" Black/ Green Monitor	90.85
BBC34	Karga 12" Black/ Green Monitor	113.85
BBC35	Karga 12" Black/ Ambre Monitor	113.85
BBC40	Cassette Recorder for BBC	29.90
BBC41	Single 5.25" Disc Drive 100K	265.00
BBC42	Single 5.25" Disc Drive 200K	328.90
BBC49	5.25" Discs for BBC 40/80 tracks	2.20
BBC50	Epson MX80T type 3 for BBC	373.75
BBC51	Epson MX80T/T type 3 for BBC	396.75
BBC70	Plinth/Stowage for BBC	29.90
BBC80	Cassette lead for BBC	4.60
BBC95	Printer lead for BBC	17.25
DRG1	Dragon 32K Micro	196.50
DRG50	Saikosa GP100A. Printer for Dragon	228.75
DRG60	Joysticks for Dragon	19.95
DRGxx	Cartridges for Dragon	19.55
ATM2	Atom assembled 12kram	184.00
ATM11	Atom kit 12kram	149.50
ATM26	New Atom 1.8A Power Supply	9.66
ATM41	5.25" Disc Drive for Atom (100K)	335.50

Large stocks. Prices inclusive of VAT.
All prices inclusive of postage except Micros £3.00

All upgrades etc. are fitted free of charge and the computer fully retested. Credit cards not accepted for BBC Micro's.



Electronequip



128 West Street, Portsmouth (A27 opp. RLBV) Hants PO16 9KE. Tel. 0705-325354

Push your Sinclair to the limit

ZX81/SPECTRUM ARCADE GAMES

NEW

ZX INVASION FORCE (ZX81)

Use your skill to fire through the energy band to destroy the menacing alien ship — £3.95

NEW

SPEC INVADERS SPEC GOBBLEMAN

These exciting high-speed classic games incorporate hi-resolution graphics and sound to bring you the best in arcade action at only £4.95 each (16/48K)

NEW

SPEC FROG S/SHOWDOWN (16/48K)

Hop across the dangerous road avoiding the lethal cars, then lories. Go back to the wild west for a gunfight battle amongst cacti and wagons. Features include western music. £4.95

NEW

NAMTIR RAIDERS (ZX81)

High speed, quick action arcade game with four separate groups of attackers. £3.95

Gobblerman also available for ZX81 at £3.95

UTILITIES



TOOLKIT

Nine powerful new functions for your ZX81 (including re-number lines, goto, gosub, program merge, string finding and replacement. £5.95

SPEC BUG

A30 in 1 machine code tool and disassembler for your ZX Spectrum. £6.95

ZX BUG

A30 in 1 machine code tool and disassembler for your ZX81. £6.95

Improve your machine code programs with this new 48K Spectrum Assembler

Just released by Artic, this new professional quality assembler is also available for 16K ZX81 and features:—

- Word-processor-like text editor. • High-speed, versatile two-pass mnemonic assembler with labels and detailed error-trapping. Will assemble to any address.
- Essential support facilities such as memory-edit, register inspect/modify and search for de-bugging. • Full output to ZX-printer. • Memory-status report and comprehensive user-manual.

**ONLY
£9.95**

ADVENTURE GAMES

**JUST RELEASED
for 48K
SPECTRUM**
(will be available for ZX81)

INCA CURSE

(Adventure B) In a jungle clearing you come across an ancient Inca temple. Your mission to enter, collect the treasure and escape alive. But beware!

Includes a cassette save routine. £6.00

SHIP OF DOOM (Adventure C)

You are unavoidably drawn to an alien cruiser. Can you reach the control room and free yourself? Or will they get you first? Includes a cassette save routine. £7.00

ESPIONAGE ISLAND (Adventure D)

While on a reconnaissance mission your plane loses control and you are forced to land. Can you survive and escape with the island's hidden secret? £8.00

PLANET OF DEATH (Adventure A) 16/48K

You find yourself stranded on an inhospitable alien planet. Can you reach your ship and escape? £5.00

**REDUCED TO
£29.95**

ZX FORTH

Supplied on cassette with editor cassette, user manuals and keyboard overlay. ZX FORTH combines the simplicity of basic with the speed of machine code

THE ULTIMATE ADVENTURE FOR THE SPECTRUM/ZX81 for only £9.95

**AND THE CHANCE
TO WIN
£10,000
or more IF YOU**



RULES AVAILABLE
FROM ARTIC

Your eccentric father has left you £10,000 in his will. In order to claim your windfall you must solve twelve clues and gain access to a bank account in which the money has actually been deposited. Be the first to crack the puzzle and the prize is yours! Plus you will win two tickets to the city of the secret KRAKIT™ vault location. The prize money is increased weekly. A telephone number will be supplied so you have the opportunity to find out just how much you could win.

DON'T MISS YOUR CHANCE TO WIN A FORTUNE!

ALWAYS AHEAD WITH ZX81/SPECTRUM SOFTWARE

Cheques & P.O. made payable to: Artic Computing Limited. Dealer enquiries welcome. Please state whether your order is for ZX81 or Spectrum. Send S.A.E. (8in x 3in) for catalogue.



ARTIC COMPUTING LTD.

396 JAMES RECKITT AVENUE,
HULL, N. HUMBERSIDE,

A GREAT CHESS GAME FOR YOUR ZX81 OR SPECTRUM



ZX CHESS I

Very popular machine code program, with six levels of play and an analysis option. Available for ZX81. £6.50

ZX CHESS II

A new improved version, with a faster response time, seven levels of play, analysis option and in addition a recommended move option. £9.95

ZX 1K CHESS

An incredible game in 1K for only £2.95

As advertised on ITV

SPECTRUM VOICE CHESS

This incredible program takes you through your game. It tells you its move, recommends a move, and contains a range of facetious comments. The game is based on the highly successful ZX Chess II and is offered at the Christmas offer price of £9.95

SPECTRUM CHESS now only £9.45

To: Artic Computing Ltd., 296 James Reckitt Avenue, Hull, N. HUMBERSIDE, HU8 5JA.

Please supply.....

Cheque for total amount enclosed.

Name.....

Address.....

CV62

BBC MICRO INSTANT MACHINE CODE!

Yes, it's true. Instant machine code from a good subset of BBC BASIC. Type your BASIC program into your model B BBC Micro, trigger the compiler, and your program is changed almost instantaneously into superfast machine code.

For £34.95 you get: Cassette version of the complete compiler (along with a version of the compiler for use with discs, ready for when you upgrade, the disc version being dubbed on the cassette after the cassette version); complete compiler listing; extensive documentation and instructions. The compiler was written by Jeremy Ruston.

THE BBC MICRO REVEALED

By Jeremy Ruston

...destined to become the bible of all BBC microcomputer users... (Personal Computing Today). If you've mastered the manual, then this book is for you. Just £7.95

LET YOUR BBC MICRO TEACH YOU TO PROGRAM

By Tim Hartnell

...takes you further into the cloudy areas of the BBC machine than anything else I've yet seen... (Computer and Video Games). If you're just starting out in the world of programming, then this book is the one for you. Forty complete programs, including Othello/Reversi, Piano and a host of dramatic graphic demos. Just £6.45

Interface, Dept. CVG

44-46 Earls Court Road, London W8 6EJ

Please send me:

() INSTANT BBC MACHINE CODE—tape and book—£34.95

() THE BBC MICRO REVEALED—Ruston—£7.95

() LET YOUR BBC MICRO TEACH YOU TO PROGRAM—Hartnell—£6.45

I enclose £

Name

Address

A retailer for Sinclair accessories in the Yorkshire/Lancashire/Humberside area.

We are situated close to the M1 & M62 motorways and offering easy parking.

As well as a complete range of hard and software, our service department can repair, modify or fit a wide range of accessories.

For further details of these and many other services phone:

PHILIP COPLEY
on
0924 272 545

Manufacturers of accessories looking for a retailer in our area are invited to contact us.

**SPECTRUM SOFTWARE/HARDWARE
AVAILABLE NOW**

Hours of business:
MONDAY to SATURDAY, 10am to 8pm

ADVERTISEMENT INDEX

Acornsoft	96	Landau Electronics	64
Adaptors and Eliminators	83	Lansdown Computers	83
Akhter Instruments	108	Leisuristics	80
Algray	48	Llamosoft Software	40
Allrian	90	M C Lohmeyer	66
Artic Computing	113	Maplin	76/77
Atari	24	Micromania	74
Automaia	36/105	Micronet	106/107
BBC Publications	48	Micropot	92
Calisto Computers	44	Mikro-gen	112
Channel 1 Software	80	Mr Micro	112
Chromasonic Electronics	6	New Generation Software	85
Commodore	70/71	Oric Products	86/87
Competence	26	M Orwin	26
Computer Games Ltd	94/95	Pancorn	92
Computers For All	5	Personal Computer Palace	109
Comserve	104/105	Pixel	40
P. Copley Hi-Fi	114	Plymouth Computers	85
Creative Software	90	Quicksilver	61
Database Software	110	Romik Software	OBG
Digital Fantasia	96	Shiva Publishing	8
East London Robotics	111	Silica Shop	67
Electronequip	112	Sinclair Research	54/55
Elite Services	66	SIR Computers	110
Folkade Ltd	74	Soft Deal	34
Games Centre	105	Soft Toys	26
J K Greye Software	109	Software For All	20
Henry's Radio	112	Spectrum	12/13/14/15
How Leisure	111	Thorn EMI	22/23
LJK Software	111	Titan Programs	85
Interceptor Micros	43	Twickenham Computer Centre	104
Interface	114	Victa Ceramics	110
Imagine	115	Video Games Club	2
Kansas City Systems	64	Vision Store	102
Kayde Electronic Systems	103	Yorkshire Microcomputers	104

IMAGINE

a company brought into being by top professional programmers, graphic designers and software marketing specialists.

A company dedicated to the highest quality software and customer service in the world.

ARCADIA

the name of the game especially created to be the fastest, meanest, most addictive shoot 'em up game you've ever desired. Wave after wave of the most loathsome and deadly aliens billow hypnotically towards your space fighter with deadly intent. But then you have dual Plasma Disruptors and an Ion Thrust Drive haven't you? ...

ZXSPECTRUM

(16K or 48K)

100% machine code with 12 different alien types, incredible animation and explosive effects, sound and the fastest, smoothest hi-res graphics ever!

VIC-20

(any memory size)

100% machine code with eight different alien types, smooth hi-res multicolour graphics and animation, narrow playfield and sensational sound effects. Keyboard or joystick. Game design and software by D. H. Lawson.



ARCADIA

For any ZX SPECTRUM or VIC-20. Just

£5.50

which includes first class postage and packing, V.A.T., and an **UNCONDITIONAL LIFETIME GUARANTEE.**

When you buy ARCADIA

you buy it for life. If an Imagine software product EVER fails to load first time simply return it to Imagine for an instant free replacement.

ALL ORDERS DISPATCHED BY FIRST CLASS POST WITHIN 24 HOURS OF RECEIPT.

Imagine Software

Masons Buildings, Exchange Street East,
Liverpool, Merseyside L2 3PN.



SUPERFAST CREDIT CARD SALES LINE:

051 236 6849 (24hrs)



Why not put a first class stamp on your order and you will receive ARCADIA within 3 days of posting. Please allow for Xmas post!

Post coupon now to:

Imagine Software
Masons Buildings, Exchange Street East,
Liverpool, Merseyside L2 3PN.

Please rush me a copy of ARCADIA for (tick box):

☐ Any ZX Spectrum ☐ Any Commodore VIC-20

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

*Please debit my Barclaycard/Access

I enclose Cheque/P.O. for

*Delete as applicable

£

Name: _____

Address: _____

CVG1





ROMIK SOFTWARE

24 Church Street, Slough, SL1 1PT. Telephone: Slough (STD0753) 71535

ROMIK
PROMISE A
MINIMUM OF ONE
NEW GAME EVERY
MONTH
ALL PROGRAMS £9.99

BRITAIN'S LEADING GAMES SOFTWARE HOUSE ARE
PROUD TO ANNOUNCE OUR NEW RANGE OF EXCITING
GAMES & OTHER SOFTWARE FOR THE VIC 20, SPECTRUM & ZX81
(GAMES FOR: BBC, DRAGON & ATARI AVAILABLE SOON)

ALL ACTION GAMES CARRY A FREE ENTRY TO NATIONWIDE COMPETITIONS WITH FANTASTIC PRIZES

SEA INVASION FOR THE UNEXPANDED VIC 20



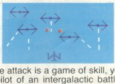
Fight off the attacking sea creatures for as long as you can. Shoot the whales for a surprise score. Watch out for the crabs, starfish, & octopi!!!!!!!!!!!!!!!!!!!!

MOONS OF JUPITER FOR EXPANDED VIC 20, 3K, 8K OR 16K



You are the commander of a fleet of destroyers... Looking on from the safety of mother ship, you send in one destroyer at a time to blast a passage through the moons of Jupiter. Your destroyers have to dodge, and blast the "U.F.O's"... Watch out for the "Gologs", they can smash your destroyers, but you cannot harm them....

SPACE ATTACK FOR THE UNEXPANDED VIC 20



Space attack is a game of skill, you, as the pilot of an intergalactic battleship, have to fight your way through wave after wave of various alien space ships

MARTIAN RAIDER

FOR UNEXPANDED VIC 20

Skim as close as you dare to the surface of the planet, devastating the Martian cities, destroying ammunition dumps (gaining more time), shooting down the ground to air missiles and U.F.O.s, dodging or blasting the meteorites.



"A REAL ACTION SHOT OF THE GAME"

SHARK ATTACK

FOR UNEXPANDED VIC 20

You are in shark infested waters after being thrown overboard from a pirate ship. Your only protection being an atomic net which you trail behind you, trying to cover all the visible ocean and ensnare the sharks at the same time. Beware of stopping or covering your tracks for too long, if you do, then the sharks will escape and come after you. Watch out for the ever increasing deadly octopi (sometimes the sharks will eat part or all of one!).



"A REAL ACTION SHOT OF THE GAME"

MIND TWISTERS

FOR UNEXPANDED VIC 20

FOUR GAMES TO STRETCH YOUR BRAIN
Blackjack, Decipher, Four Thought and Fester are our computerised versions of very popular home games and will test your mental agility and skill for many a long hour.

ROBOT PANIC... A FANTASTIC HIGH SPEED GAME ON CARTRIDGE THE PRICE IS YET TO BE ANNOUNCED, BUT AROUND £16.

SUPER NINE

ZX81

NINE 1K GAMES

- 1.. CANYON 2.. ASTEROIDS
- 3.. ASTROBLASTER 4.. DEFENDER
- 5.. SQUASH 6.. SCRAMBLE
- 7.. SKETCH 8.. COSMIC RAIDER
- 9.. FOUR THOUGHT.

MULTISOUND SYNTHESIZER

FOR THE UNEXPANDED VIC 20

The Vic Multisound Synthesiser is very flexible and can be played in more ways than can ever be explained here, to create music and special effects. For example, create any tune, up to 255 notes (after following appropriate instructions), then press "F1" or "F3", then key "9" and enjoy the added effect. Now hit "+", listen to the difference. For a surprise — hit "—". Now add a melody over the top — hit key "B" then "7" — now play a melody, or experiment. Have fun!

Our games are available from all good home computer shops, including: all Laskys branches, Micro-C, Insite, Currys at: Birmingham (233 1195), Leeds (445661), Leeds (425079), Nottingham (412456), Southampton (29676), 9, side Bridgers at: Bristol (055091), New Malden (0544-2091), and at: Leicester (546224), London (387 9379), Manchester (834 0144), Micro-C, Chromasonic Electronics, 48 Junction Road, Arbury, London N19 5HD (01-263 9492-263 9495), Tel: 22565, Maxwell Electronics Supplies Ltd, P.O. Box 3, Rayleigh, Essex (0702 55291), 554155, Gemini Electronics, 50 Newton Street, Off Piccadilly, Manchester M1 2EA (061-236 3083), Gower, 3 Gloucester Road, Brighton (028242), Vic Centre, 154 Victoria Road, Acton, London W3 (01-992 9904), Metcylene, 137 The Strand, London WC2 (01-240 2321), Metcylene, 177 London Road, Croydon (01-688 8628), Metcylene, 9 Victoria Street, London SW1 (01-828 2311), Dixon, Queensmead, Slough (23211), Channel One, 174 High Street, Hornchurch, Essex (75613) & Golden Cross Parade, Rochford, Essex (540455), Twil Star Computer, 17 Regatta Road, Southall, Data Assure, 44 Shinton Street, London NW1, Graham & Son, 51 Gorton Road, Omagh, N. Ireland, Har Electronics, 68 Fleet Road, Fleet, Hants (5658), Ecclesi Electronics, Legge Lane, Birmingham, The Computer Centre, 14 Hemmels, Landon, Essex (0208 410155), Marsden, 15 Moorfields, Liverpool R. Seaside, 47 Woodlands Road, Andwell, Lytham St. Anne's, Cambridge Computer Centre, Emmanuel Street, Cambridge, Karinda & Co, Ebor Park, Selly Oak, Birmingham, The Sharp Computer Shop, Maple Street, Lincoln, Mileguy, 75 Hare Lane, Gloucester (411010), North West Business Machines, Curate Street, Great Harwood, Lancs, Inston Footwear, 23 King Street, Great Yarmouth, J.A.D., 21 Market Avenue, Plymouth (669492), A.C. Systems, Exeter, Microtrading, Birmingham, Supersoft, Harrow, Anroc Computers, Harrow, Surrey (340063), Ozware Computers, Harrow (43-1060), Cavendish Data Systems, South Norwood (83-8941), Software Master, 30 Lincoln Road, Birmingham, Tomorrows World, Duxon, Algray Software, Barnes (831199), Computer & Business Systems, Belper, Leics (0582 601191), Dyad Developments, Orton (08446 729), Leisuretime Blackpool Computer Stores (0253 27091), Carole Radio Ltd, Bedford (60447), Byte Shop Computers Ltd, Glasgow (221 7409), Northingham (40376), Manchester (236 4737), First Byte Computers, Main Centre, Derby (365280), Simmons Mages Computers Ltd, Twickenham (631 4477), Capital Computer Systems, (03-3026), A.Q.M. Business Systems, L.V.B. Boleyn, Kent (548923), Judea Ltd, Bridge near Canterbury, Kent (0227 830063), Twickenham Computer Centre (01-85-7896), Kent Microcomputers, Maidstone (0622 52784), J.S. Bennett Computers Ltd, The Computer Shop, Angles (01-546 3703), Chris Denning Ltd, Poole (0202 761850), Yorkshire Micro Computers, Scarborough, Yorks (072 78136).

ONE FULL TIME, FULLY EXPERIENCED MACHINE CODE PROGRAMMER WANTED URGENTLY